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ALVIN J. COX M. A., PH. D.
GENERAL EDITOR

SECTION C. BOTANY

E. D. MERRILL, M. S.
EDITOR

WITH THE COÖPERATION OF

W. H. BROWN, PH. D.; E. B. COPELAND, PH. D.
F. W. FOXWORTHY, PH. D.; L. M. GUERRERO, PHAR. D.
C. F. BAKER, A. M.; R. C. MCGREGOR, A. B.

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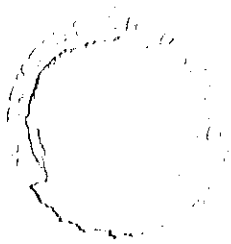

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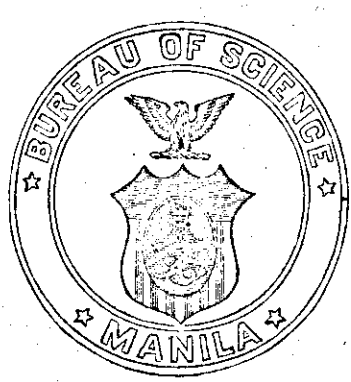

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THE PHILIPPINE

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C. BOTANY

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NEW PLANTS FROM SORSOGON PROVINCE, LUZON

By E. D. MERRILL *

(From the Botanical Section of the Biological Laboratory, Bureau of Science, Manila, P. I.)

This paper is based almost wholly on material recently collected in Sorsogon Province, Luzon, a region in which very little field work has been prosecuted in botany since the exploration of that province by Haenke, one of the botanists of the Malaspina Expedition, in about the year 1792. The field work was done by Maximo Ramos, who spent from July 22, 1915, to September 14, 1915, in Sorsogon, working on Bulusan Volcano, Mount Kililibong, Mount Pocdal, Mount Bogacaua, Mount Lalao, and at Lake Polog. In this time he collected about four hundred numbers of flowering plants and ferns, of which a number, on examination, prove to be undescribed species. In addition to the forty previously undescribed forms considered in this paper, Mr. Elmer has indicated nineteen additional sheets of this collection as representing new species, presumably in those cases where material collected by Ramos matches material collected by himself in his exploration of Sorsogon subsequent to Ramos's trip. Some material, on account of inadequate specimens, immature flowers, or lack of flowers or fruits, still remains to be considered at a later date when the species shall have been collected again. The novelties in the collection as a whole approximate 15 per cent, which must be considered rather a high one, in view of the fact that field work has been actively prosecuted in the Philippines for about thirteen years, and that the collector, on whose material this paper is based, has no botanical training

* Associate professor of botany, University of the Philippines.

and no technical knowledge of the subject. It affords a good illustration of the fact that in spite of what has been done in the past thirteen years, we have really but made a beginning on the botanical exploration of the Philippines.

In the present paper one genus and forty species are described as new, while the genus *Schuurmansia* is new to the Archipelago. This latest addition to the list of Philippine *Ochnaceae* is of considerable phytogeographical interest, as it adds another genus to the already long list that indicates the close geographical relationships of the Philippine flora to that of the islands to the south and southeast. Hallier [1] who has recently considered the genus, has removed the Bornean *Schuurmansia angustifolia* Hook. f. as the type of a new genus, *Schuurmansiella*, leaving *Schuurmansia* with seven species, confined to Amboina, New Guinea, Ternate, Halmaheira, and New Mecklenburg. To these may now be added two additional species in Luzon; one described as new in the present paper, and the other transferred to *Schuurmansia* from *Calophyllum*, where it was originally described by Fernandez-Villar.

GRAMINEAE

RAMOSIA genus novum

(Festucae, Eufestucae)

Spiculae oblongo-ovatae, leviter compressae, 1- ad 3-florae, laxe paniculatae, rhachilla inter flores elongata, vix articulata, glabra, ultra flores fertiles producta gluma vacua valde reducta instructa; floribus hermaphroditis. Glumae 2 inferiores vacuae, acutae vel acuminatae, 5- vel 7-nerves, obscure carinatae, inaequales; florentes acutae, membranaceae, quam vacuis paullo longioribus, 7- vel 9-nerves, basi leviter inflatae, inter nervis obscure sulcatae. Palea 2-carinata. Stamina 2. Styli distincti, tenui, stigmatibus plumosis. Caryopsis glabra, nitida, nigra, anguste oblonga, teres, libera. Gramen humile simplex, foliis planis. Panicula laxa, spiculis breviter pedicellatis, glumis ♀ distantibus.

RAMOSIA PHILIPPINENSIS sp. nov.

Glabra, e basi prostrata usque ad 20 ad 30 cm alta; foliis lanceolatis, acuminatis, membranaceis, usque ad 6 cm longis et 5 mm latis, vaginis quam internodiis brevioribus, margine ciliatis; paniculis exsertis, simplex, 5 ad 9 cm longis, ramis paucis, 2 ad 4 cm longis; spiculis purpureis, oblongis, breviter pedicel-

[1] Hallier f. Ueber die Luxemburghieen-gattungen Schuurmansia, Schuurmansiella und Blastemanthus. Recueil Trav. Bot. Néerl. 10 (1913) 340–355.

latis, racemose dispositis, 4 ad 5 mm longis; glumis exterioribus inaequalibus, acutis vel acuminatis, 5- vel 7-nerviis, fertilibus 1 ad 3, 7- vel 9-nerviis, circiter 3 mm longis.

A glabrous slender, simple or but slightly branched, apparently annual grass, the lower parts of the stems prostrate, rooting, the leafy parts erect or ascending, 20 to 30 cm high, the culms smooth, glabrous, striate, about 1 mm in diameter. Leaves membranaceous, glabrous, narrowly lanceolate, 4 to 6 cm long, 3 to 5 mm wide, acuminate; ligule membranaceous, hyaline, about 1.5 mm long; sheaths close, shorter than the internodes, their margins prominently ciliate with short hairs. Panicles simple, exserted, oblong-pyramidal, 5 to 9 cm long, the branches 5 to 11, spreading or ascending, distant, solitary, 2 to 4 cm long, the spikelets racemosely arranged on the simple branches, 5 to 12 on each branch. Spikelets oblong to oblong-lanceolate, somewhat compressed, purplish, 4 to 5 mm long, their pedicels minutely scabrid, about 1 mm long, apparently continuous. Empty glumes 2, the first oblong-lanceolate, acuminate or slightly apiculate, obscurely keeled, 5-nerved, about 2.7 mm long, the second similar to the first but about 3.2 mm long. Flowering glumes 1 to 3 in each spikelet, the rachilla produced above the empty glumes and between each flowering glume, the lower rachilla joints nearly 1 mm long, the upper ones 1.2 to 1.5 mm long, glabrous, extending beyond the upper flowering glume and ending in a greatly reduced empty glume which often appears as a mere rudiment or slight enlargment of the end of the rachilla, the glumes 7- or 9-nerved, about 3.8 mm long, oblong-lanceolate, slightly apiculate, usually acute, the basal part slightly rounded-inflated and obscurely sulcate between the nerves, the fourth and fifth glumes, when present, similar to the third one but slightly shorter. Caryopsis black, smooth, shining, narrowly oblong, cylindric, about 1 mm long.

LUZON, Province of Sorsogon, Lake Polog, *Bur. Sci. 23607 Ramos*, August 27, 1915, growing along the border of the lake either in wet swampy places or in shallow water.

The genus is rather anomalous in several respects, the plant in habit strongly resembling some forms of *Panicum nodosum* Kunth, except in its shorter culms, and some forms of *Ichnanthus pallens* Munro, but its floral structure removes it at once from the *Paniceae*. Often but a single flowering glume is present in each spikelet, but frequently two are present, and less frequently three. The rachilla is elongated between all the glumes, and extends above the last flowering glume, bearing at its apex a very greatly reduced empty glume, so reduced at times as to appear merely as the slightly enlarged tip of the rachilla. The rachilla does not appear to be jointed, but the pedicels appear to be jointed at the base, for at least they separate from the rachis very easily.

After considerable study of this plant I am inclined to place it in the general alliance with *Glyceria* R. Brown, but am not entirely satisfied that this is its proper disposition. In its facies and in details it is quite different from *Glyceria*. Its striking distinguishing characters are its 1- to 3-flowered spikelets, its distant glumes, its flowering glumes slightly inflated and longitudinally sulcate at the base, and its produced rachilla that is tipped with a very greatly reduced sterile glume, so reduced usually as to appear like a mere enlargement of the tip of the rachilla.

The genus is dedicated to Maximo Ramos, who for many years has been employed by the Bureau of Science as a botanical collector, and whose field work has yielded material on which the descriptions of several hundred new species have been based.

ARACEAE

POTHOS Linnaeus

POTHOS DOLICHOPHYLLUS sp. nov. § *Allopothos, Longevaginati.*

Alte scandens, glabra; foliis coriaceis, in siccitate pallidis, anguste lanceolatis, usque ad 45 cm longis et 6 cm latis, tenuiter longissime caudato-acuminatis, basi obtusis, leviter inaequilateralibus, nervis collectivis utrinque 2 vel 3, distinctis; petiolo circiter 15 cm longo, in siccitate tubuloso, usque ad geniculis vaginato; pedunculis 2 vel 3, 4 ad 7 cm longis; spathis oblongo-ovatis, coriaceis, usque ad 15 cm longis et 5.5 cm latis, caudato-acuminatis; spadicis sessilibus, cylindraceis, 4 ad 5 cm longis, circiter 1 cm diametro.

A stout, climbing vine, rooting copiously at the nodes, the stems about 1 cm in diameter, the nodes not prominent, the internodes about 2 cm long. Leaves coriaceous, pale when dry, narrowly lanceolate, slightly inequilateral, 30 to 45 cm long, 4 to 6 cm wide, base somewhat narrowed, obtuse, apex long and slenderly caudate-acuminate, the acumen up to 3 cm in length, the midrib very prominent, the longitudinal collective nerves 2 or 3 on each side of the midrib, slender, distinct, the third one when present submarginal; petiole about 15 cm long, cylindric when dry, narrowly winged throughout its length, at most 8 mm in diameter. Peduncles 2 or 3, each subtended by a narrowly lanceolate, long-acuminate, somewhat sheathing bract up to 11 cm in length, the peduncles 4 to 5 cm long. Spathes oblong-ovate, coriaceous, up to 15 cm long and 5.5 cm wide, long and slenderly caudate-acuminate. Spadices sessile, cylindric, obtuse, 4 to 5 cm long, about 1 cm in diameter.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23708 Ramos* (type), in damp forests, August 6, 1915. SAMAR, Ambalate, *Bur. Sci. 17628 Ramos*, April 6, 1914.

A most striking species, clearly in the alliance with *Pothos rumphii* Schott, but with entirely different leaves, much broader spathes, and shorter, sessile spadices.

URTICACEAE

ELATOSTEMA Forster

ELATOSTEMA HOLOPHYLLUM sp. nov.

Repens, simplex, partibus junioribus parce hirsutus; receptacula staminiferis distincte pedunculatis, paucifloris, bracteis exterioribus 4 ad 5 mm longis, corniculatis; foliis inaequilateraliter oblongis, integris, usque ad 2.5 cm longis, obtusis; stipulis magnis, membranaceis, in paribus valde inaqualibus, usque ad 8 mm longis.

A prostrate slender plant, unbranched, rooting at the nodes, the stems up to 20 cm in length, sparingly hirsute. Leaves inaequilateral, entire, oblong, 1.5 to 2.5 cm long, 0.5 to 1 cm wide, obtuse, the midrib on the lower surface sparingly hirsute, cystoliths scattered, prominent; lateral nerves 2 or 3 on each side of the midrib, distant, obscure, reticulations obsolete; petioles 2 mm long or less; stipules thin, brownish, in unequal pairs, the larger of each pair inequilateral, oblong to ovate-oblong, up to 8 mm long, at least twice as large as the smaller one. Male receptacles solitary, their peduncles up to 1 cm in length, the bracts broadly ovate, corniculate, up to 6 mm long. Male flowers few in each receptacle, the outer two bracteoles oblanceolate, somewhat navicular, 4 to 5 mm long, with a slender 1.5 to 2 mm long spur, the inner two much smaller. Sepals 4, broadly ovate to oblong-ovate, about 3 mm long, somewhat apiculate and obscurely bearded or hirsute at the apex.

LUZON, Province of Sorsogon, Mount Bagacaua, *Bur. Sci. 23329 Ramos*, August 20, 1915, growing on trees in the mossy forest. A smaller form of what is apparently the same species, but with shorter leaves and short-peduncled receptacles is represented by *Bur. Sci. 23546 Ramos*, from Mount Lalao, Sorsogon.

The species is well characterized by its simple, prostrate stems, and especially by its entire, oblong, obtuse leaves. It does not appear to be closely allied to any previously described species of the genus.

PROCRIS Commerson

PROCRIS BRUNNEA sp. nov.

Frutex monoicus, epiphyticus, ut videtur scandens, glaber, *P. pseudostrigosae* affinis, differt foliis minoribus, in siccitate subtus uniformiter brunneis, nervis paucioribus, 5 vel 6 utrinque.

An epiphytic, monoecious, apparently scandent, glabrous shrub, the branches brownish and wrinkled when dry, 3 to 4 mm in diameter. Leaves coriaceous, stiff, brittle, when dry the

upper surface dark brownish-olivaceous, the lower uniformly brown in color, the cystoliths small, very numerous, slightly inequilateral, oblong, straight or slightly falcate, 5 to 9 cm long, 2 to 3.5 cm wide, entire, rather prominently acuminate, base acute; lateral nerves 5 or 6 on each side of the midrib, prominent, curved, the reticulations obsolete or nearly so; petioles short, the younger ones minutely lepidote as are the very tips of the branchlets and the midrib on the lower surface of young leaves. Staminate inflorescences solitary, from the axils of fallen leaves, many flowered, long peduncled, apparently pendulous, cymose, obscurely brown-lepidote, the peduncles slender, 4 to 6 cm long, the cymes lax, 5 to 6 cm in diameter. Buds globose, about 2 mm in diameter, the sepals oblong-obovate, obtuse, about 2 mm long. Female inflorescence axillary, mostly in the upper axils, capitate, hemispheric, very dense, about 5 mm in diameter, very many flowered, the flowers crowded, minute, the achenes narrowly ellipsoid, about 1 mm long.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23705 Ramos*, August 7, 1915, on trees in the mossy forest.

A species manifestly allied to *Procris pseudostrigosa* Elm., but easily distinguished by the characters mentioned in the diagnosis above.

PROTEACEAE

HELICIA Loureiro

HELICIA OLIGOPHLEBIA sp. nov.

Arbor parva, glabra; foliis olivaceis, breviter petiolatis, nitidis, glabris, ovatis ad elliptico-ovatis, coriaceis, utrinque subaequaliter angustatis, usque ad 10 cm longis, acuminatis, basi acutis ad obtusis, margine irregulariter distanter serratis, dentibus obtusis, nervis utrinque circiter 6, distinctis; inflorescentiis usque ad 18 cm longis, multifloris, floribus circiter 14 mm longis, pedicellis basi breviter connatis.

A small glabrous tree, the branches terete, brownish or grayish. Leaves numerous, ovate to ellptic-ovate, coriaceous, 6 to 10 cm long, 3 to 6 cm wide, olivaceous, shining, subequally narrowed to the shortly and obtusely acuminate apex and to the acute to obtuse base, rather coarsely and irregularly toothed, the teeth obtuse; lateral nerves about 6 on each side of the midrib, prominent on the lower surface, the primary reticulations lax, distinct; petioles very short, scarcely exceeding 2 mm in length. Inflorescence up to 18 cm in length, many flowered, mostly lateral, solitary or sometimes in pairs. Flowers green and white, slender, in pairs, about 14 mm long, base and apex

of the buds slightly enlarged, the enlarged parts of the sepals above the insertion of the stamens narrowly oblong, about 3.5 mm long. Anthers about 2.5 mm long. Ovary glabrous. Pedicels 2 to 3 mm long, in pairs, slightly united at the base.

LUZON, Province of Sorsogon, Mount Kililibong, *Bur. Sci. 23320* (type), *23632 Ramos*, August, 1915, on forested slopes near the summit of the mountain.

This is in the group with *Helicia philippinensis* Meissn. and *H. cumingiana* Meissn., but has rather smaller leaves with fewer lateral nerves than either of the above species. It is, however, manifestly very closely allied to both.

RANUNCULACEAE

NARAVELIA DeCandolle

NARAVELIA PHILIPPINENSIS sp. nov.

Scendens, inflorescentiis sepalisque prominente ferrugineo-pubescentibus exceptis glabra; ramulis brunneis vel pallidis, cylindraceis, longitudinaliter striatis; foliis 3-foliolatis, foliolis integris, ovatis ad oblongo-ovatis, usque ad 9 cm longis, chartaceis, glabris, nitidis, apice obtusis vel obscure apiculatis, basi rotundatis ad acutis, 5-pli- vel obscure 7-plinerviis, nervis exterioribus rectis, adscendentibus, reticulis laxis; inflorescentiis axillaribus, usque ad 20 cm longis, paucifloris; floribus 4-meris, sepalis oblongis, acutis, recurvatis, circiter 9 mm longis, utrinque ferrugineo-pubescentibus.

A scandent plant, the branches terete, up to 4 mm in diameter, pale or brown when dry, longitudinally striate, the internodes up to 20 cm in length. Leaves 3-foliolate, glabrous, their petioles about 10 cm long, often twining about branches and other objects to support the plant; leaflets glabrous, shining, olivaceous, chartaceous, oblong to ovate-oblong, 6 to 9 cm long, 3.5 to 5 cm wide, entire, base rounded to somewhat acute, distinctly 5-plinerved or indistinctly 7-plinerved, apex obtuse or obscurely apiculate; nerves leaving the midrib within the lower 1 cm, the outer, basal ones straight, prominent, ascending, the reticulations lax; petiolules 3 to 4 cm long, like the petioles sometimes twining. Panicles axillary, up to 20 cm long, rather narrow, few flowered, the lower primary branches scarcely exceeding 3 cm in length, the upper shorter, all parts rather prominently ferruginous-pubescent with short hairs. Flowers yellowish, 4-merous, their pedicels 1 to 1.5 cm long. Sepals oblong, acute, recurved, ferruginous-pubescent or both surfaces, about 9 mm long and 4 mm wide. Petals none. Stamens indefinite, slender, slightly cinerous-puberulent, 6 to 7 mm long.

LUZON, Province of Sorsogon, Mount Bagacaua, *Bur. Sci. 23459 Ramos*, August 21, 1915, on slopes in thickets or forests.

This species is well characterized by its 5-plinerved, entire, shining leaves and its ferruginous inflorescence. It seems to be very closely allied to *Naravelia antonii* Elm., but my specimen of that species is entirely glabrous.

ANONACEAE

PHAEANTHUS Hooker f. & Thomson

PHAEANTHUS NITIDUS sp. nov.

Arbor, partibus junioribus inflorescentiis foliisque plus minusve pubescentibus; foliis oblongis, chartaceis, usque ad 16 cm longis, tenuiter acute acuminatis, basi acutis, nervis utrinque 11 ad 13, prominentibus, in siccitate uniformiter castaneis, nitidis; floribus longe pedicellatis, petalis interioribus oblongis, obtuse acuminatis, circiter 2.5 cm longis; ovulis solitariis.

A tree, the branchlets and inflorescence distinctly ferruginous-pubescent, the branches and branchlets slender, terete. Leaves castaneous when dry, shining, oblong, chartaceous, 12 to 16 cm long, 4.5 to 6 cm wide, the upper surface with scattered ferruginous hairs, ultimately glabrous or nearly so, the lower surface of about the same color, ferruginous-pubescent on the midrib and lateral nerves; lateral nerves 11 to 13 on each side of the midrib, prominent, gradually curved; petioles pubescent 3 to 5 mm long. Inflorescence extra-axillary, each with but one or two yellowish flowers at a time, peduncled, more or less corymbose, ferruginous-pubescent. Pedicels slightly pubescent, about 3 cm long. Sepals very minute, less than 0.5 mm long. Outer three petals triangular-ovate, acute, somewhat pubescent, less than 1 mm long. Inner three petals oblong, coriaceous, about 2.5 cm long and 1 cm wide at maturity, outside sparingly pubescent, especially at the base, inside glabrous, nearly black when dry, somewhat excavated at the base inside. Stamens very numerous, about 2 mm long, the connectives obliquely truncate. Carpels numerous, pubescent, gibbous, with the styles 3.5 to 4 mm long; ovules solitary.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23477 Ramos*, July 29, 1915, in forests on the lower slopes.

This species is manifestly allied *Phaeanthus ebracteolatus* (Presl) Merr. (*P. cumingii* Miq.), from which it is readily distinguished by its leaves being uniformly castaneous when dry, its ferruginous indumentum, and its more numerously nerved, long, and sharply acuminate leaves. Apparently referable here is *Bur. Sci. 20922 Ramos*, from Mount Isarog, Province of Camarines, Luzon, distributed as *Phaeanthus ebracteolatus* Merr.

GONIOTHALAMUS Blume

GONIOTHALAMUS BRUNNEUS sp. nov.

Frutex vel arbor, glabra, ramis ramulisque teretibus; foliis oblongis, coriaceis, in siccitate brunneis, nitidis, usque ad 22 cm longis, apice brevissime abrupte acuminatis, basi acutis, nervis utrinque circiter 10, tenuibus, distinctis; floribus rubris, solitariis, e axilis defoliatis, circiter 5.5 cm longis, petalis exterioribus circiter 2 cm latis; stylis tenuibus, elongatis; ovulis 1.

A shrub or small tree, entirely glabrous except the slightly pubescent parts of the flower. Branches and branchlets terete, pale-brownish. Leaves oblong, coriaceous, brown and shining when dry, 15 to 22 cm long, 5 to 8 cm wide, the apex very shortly and abruptly blunt-acuminate, base acute, the lower surface paler than the upper, smooth; lateral nerves slender, distinct, brown, about 10 on each side of the midrib, anastomosing, the primary reticulations slender, lax; petioles stout, 5 to 8 mm long. Flowers red, in the axils of fallen leaves, solitary, their pedicels stout, 1.5 to 2 cm long. Sepals broadly ovate, coriaceous, rounded, glabrous, about 8 mm long. Outer three petals coriaceous, oblong, at maturity about 5.5 cm long and 2 cm wide, acute, glabrous or with few, minute, scattered, shining, brownish hairs; inner three petals thickly coriaceous, oblong-ovate, 1.5 cm long, 8 mm wide, somewhat pubescent. Stamens indefinite, 3 to 3.5 mm long, linear, flat. Carpels indefinite, narrowly oblong, appressed-hirsute, 2 mm long; ovules solitary; style slender, glabrous, about 3 mm long; stigma slightly enlarged, obscurely and minutely 2-toothed.

LUZON, Province of Sorsogon, Bulusan Volcano, *Bur. Sci. 23680 Ramos*, September 6, 1915, on damp forested slopes.

In many respects this species resembles *Goniothalamus mindanaensis* Merr. (*G. philippinensis* Elm.), especially in its leaf characters. It is readily distinguished, however, by its oblong inner petals which are 5.5 cm long and 2 cm wide, those of the species mentioned above being very broadly ovate, 3.5 to 4 cm in width.

LAURACEAE

CRYPTOCARYA R. Brown

CRYPTOCARYA AFFINIS sp. nov.

Species *C. ilocanae* Vid. similis et affinis, differt foliis in siccitate brunneis, nitidis, glabris, nervis utrinque 2 vel 3, ramis ramulisque brunneis, laevis, glabris.

A tree, quite glabrous except the inflorescence which is sparingly appressed pubescent. Branches and branchlets slender,

smooth, shining, glabrous, brown, terete. Leaves coriaceous, oblong-ovate, uniformly brown, shining, and of about the same color on both surfaces when dry, 5 to 8 cm long, 2.5 to 3.5 cm wide, base acute, prominently triplinerved, apex subcaudate-acuminate, acumen up to 1.5 cm long, blunt; basal nerves reaching to the upper three-fourths of the leaf, the lateral nerves leaving the midrib at from 3 to 7 mm above the base, at most two on each side of the midrib, distant, prominent, coarsely anastomosing, the ultimate reticulations close, both surfaces under a lens shallowly and densely subfoveolate; petioles glabrous, brown, 1 cm long or less. Panicles 5 to 7 cm long, obscurely pubescent. Fruits glabrous, globose or broadly ovoid, dark-brown when dry, smooth, not at all ribbed, about 8 mm in diameter.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23338 Ramos*, September 10, 1915, in damp forests.

Manifestly very closely allied to *Cryptocarya ilocana* Vid., from which it is distinguished by its brown, shining, glabrous, fewer nerved, more prominently acuminate leaves and its entirely glabrous, smooth and shining, brown branches and branchlets. Otherwise it is very similar to Vidal's species, and presents in common with it prominently triplinerved leaves.

LITSEA Lamarck

LITSEA CONFERTA sp. nov.

Arbor, subtus foliis petiolis ramulisque dense ferrugineo-pubescentibus; foliis subverticillatis, elliptico-ovatis, coriaceis, usque ad 14 cm longis, prominente acuminatis, basi acutis, nervis utrinque circiter 7, valde prominentibus, adscendentibus; fructibus e ramis infra foliis, dense confertis, numerosis, ovoideis, glabris, in siccitate verruculosis, nigris, 8 ad 10 mm diametro, calycibus leviter accrescentibus, 4–5-dentatis, persistentibus, extus plus minusve ferrugineo-pubescentibus.

A tree, the branchlets, lower surface of the leaves, and the petioles densely ferruginous-pubescent with short hairs, the older branches quite glabrous. Leaves subverticillate, somewhat crowded at the tips of the branchlets, elliptic-ovate, coriaceous, 8 to 14 cm long, 4 to 6.5 cm wide, the apex prominently and rather sharply acuminate, the base acute, the upper surface smooth, shining, under a lens densely subfoveolate-raticulate, the midrib and nerves more or less pubescent; lateral nerves about 7 on each side of the midrib, very prominent, ascending, curved-anastomosing, the primary reticulations subparallel, distinct; petioles 1.5 to 2 cm long. Fruits crowded on the branches below the leaves in sessile, subcapitate, rather dense

infructescences, about 3 cm in diameter, usually 10 to 12 fruits in each head, the pedicels stout, 2 to 3 mm long, and with the persistent, somewhat accrescent calyx more or less ferruginous pubescent, the calyx distinctly 4- or 5-toothed, about 7 mm in diameter, the fruits ovoid to subglobose, apparently fleshy, when dry black, wrinkled, glabrous, 8 to 10 mm in diameter.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23348 Ramos*, August 29, 1915, in damp forests.

A species manifestly closely allied to *Litsea tayabensis* Elm., but with entirely differently shaped, shorter, fewer nerved leaves.

LITSEA SORSOGONENSIS sp. nov.

Arbor circiter 12 m alta, ramulis junioribus inflorescentiisque ferrugineo-puberulis, foliis junioribus subtus minute obscure puberulis, vetustioribus glabris; foliis alternis, oblongis ad anguste oblongis, coriaceis, usque ad 17 cm longis, utrinque subaequaliter angustatis, basi acutis, apice obtusis ad breviter obtuse acuminatis, nervis utrinque circiter 8, prominentibus, adscendentibus; umbellulis axillaribus et e axillis defoliatis, breviter pedunculatis, bracteatis, 5-floris; staminibus fertilibus 9, antheris omnibus 4-locellatis, introrsis.

A tree about 12 m high, the young branchlets and the inflorescence ferruginous-puberulent. Branches terete, brown. Leaves alternate, oblong to narrowly oblong, coriaceous, 10 to 17 cm long, 3 to 5.5 cm wide, rather pale-olivaceous when dry, paler beneath, subequally narrowed to the acute base and to the somewhat obtuse to obscurely obtuse-acuminate apex, the upper surface glabrous, the lower surface at first minutely puberulent, ultimately glabrous, both surfaces under a lens minutely and shallowly subfoveolate-reticulate; lateral nerves about 8 on each side of the midrib, very prominent, ascending, somewhat curved, anastomosing, the primary reticulations slender, not prominent; petioles 1 to 1.5 cm long, ultimately glabrous. Umbellules fascicled, numerous, in the axils of the leaves and in the axils of fallen leaves, the peduncles ferruginous-puberulent, up to 5 mm in length, somewhat thickened upward. Bracts obovate to suborbicular, concave, rounded, ferruginous-puberulent, about 5 mm in diameter. Flowers yellowish-white, 5 in each umbellule, pedicelled, the tube pubescent. Perianth lobes 6, oblong-ovate to oblong, obtuse, about 3 mm long, spreading in anthesis, pubescent outside. Fertile stamens 9, in three series, all anthers 4-celled, introrse.

LUZON, Province of Sorsogon, Bulusan Volcano, *Bur. Sci. 23678 Ramos*, September 6, 1915, in damp forests on the lower slopes. Apparently

referable here is *Bur. Sci. 23332 Ramos*, from Mount Bagacaua, Sorsogon, but the leaves are smaller, and the flowers are immature.

The species in facies resembles *Litsea euphlebia* Merr., but is distinguished at once by its inflorescence. In the present species the umbellules are fascicled, while in *L. euphlebia* they are arranged in racemes. It is very close to *Litsea oblongifolia* Merr., from which it differs in its fewer nerved, smaller leaves, nine stamens, and in other minor characters.

LITSEA ANOMALA sp. nov.

Arbor alta, inflorescentiis floribusque exceptis glabra; foliis alternis, penninervis, oblongo-ovatis, coriaceis, usque ad 13 cm longis, prominente acuminatis, utrinque subaequaliter angustatis, basi acutis, nervis utrinque 8 ad 10, prominentibus; inflorescentiis e axillis defoliatis, solitariis vel fasciculatis, 2 ad 3 cm longis, umbellulis 5-floris, racemose dispositis, bracteis glabris; floribus 6-meris, adpresse ferrugineo-pubescentibus, staminibus 6, antheris 4-locellatis, omnibus introrsis.

A tall nearly glabrous tree, the branches terete, brownish when dry, the younger ones irregularly angular. Leaves numerous, alternate, oblong-ovate, coriaceous, 7 to 13 cm long, 3 to 5.5 cm wide, brownish-olivaceous when dry, or the lower surface uniformly brown, slightly shining, subequally narrowed to the acute base and to the prominently acuminate apex; lateral nerves 8 to 10 on each side of the midrib, prominent on both surfaces, rather straight and somewhat ascending, brown on the lower surface, obscurely anastomosing, reticulations nearly obsolete; petioles 2 to 3 cm long. Inflorescences of simple, racemosely arranged umbellules, solitary or sometimes fascicled, mostly from the axils of fallen leaves, 2 to 3 cm in length, the rachis and peduncles sparingly cinereous-puberulent, the peduncles 6 to 10 mm long. Umbellules globose in bud, the bracts four, glabrous or nearly so, obovoid, rounded, concave, rather prominently nerved, about 4 mm long. Flowers 5 in each umbellule, 4 to 5 mm in length, the perianth-tube appressed ferruginous-pubescent, somewhat enlarged upward, about 2 mm long. Lobes 6, oblong, obtuse, about 2 mm long, obscurely ciliate at the apex. Fertile stamens 6, their filaments somewhat pilose; anthers all 4-celled, introrse; filaments of the outer row eglandular, of the inner row 2-glandular at the base.

LUZON, Province of Sorsogon, Lake Polog, *Bur. Sci. 23652 Ramos*, August 26, 1915, in forests.

This species does not appear to be closely allied to any previously described Philippine representative of the genus, and has been placed in *Litsea* tentatively. It is somewhat anomalous in the genus in that its

flowers present but six stamens, the normal number being usually nine or twelve. However, in all other characters it appears to be a true *Litsea*.

SAXIFRAGACEAE

DICHROA Loureiro

DICHROA PLATYPHYLLA sp. nov.

Frutex erectus partibus junioribus inflorescentiisque exceptis glaber; ramulis incrassatis, usque ad 1 cm diametro; foliis ellipticis vel oblongo-ellipticis, membranaceis, usque ad 25 cm longis et 12 cm latis, acuminatis, irregulariter dentatis, nervis utrinque 7 vel 8, valde prominentibus; floribus numerosis, 4-meris, petalis leviter puberulis, staminibus 4, stigmate leviter incrassato.

An erect shrub at least 1 m high, the ultimate branchlets much thickened, up to 1 cm in diameter, when dry pale brownish, the older parts glabrous, the tips somewhat puberulent. Leaves, membranaceous, slightly shining, olivaceous when dry, elliptic to oblong-elliptic, up to 25 cm long and 12 cm wide, the apex slenderly and sharply acuminate, the base somewhat decurrent-acuminate, the upper surface ultimately quite glabrous, the lower surface paler and somewhat puberulent on the midrib and lateral nerves, the teeth irregular, rather prominent, somewhat triangular, acuminate up to 2.5 mm long, sinuses rounded; lateral nerves 7 or 8 on each side of the midrib, prominent, curved-ascending, the reticulations prominent, lax; petioles 2 to 3 cm long. Panicles in the uppermost axils, forming a terminal inflorescence with a few reduced leaves, puberulent, the individual panicles subcorymbose, peduncled, up to 10 cm in length. Flowers rather numerous, blue, 7 to 8 mm in diameter, 4-merous, rather laxly arranged, their pedicels up to 5 mm long. Calyx slightly puberulent, 3 to 4 mm long, the teeth triangular, about 1 mm long. Petals oblong, obtuse, spreading, slightly puberulent, 4 mm long, 1.8 mm wide. Stamens 4. Styles 4, spreading, about 3 mm long, the stigmas somewhat thickened.

LUZON, Province of Sorsogon, Mount Lalao, *Bur. Sci. 23416 Ramos*, August 11, 1915, in damp forests.

This species is well characterized by its broad leaves and its 4-merous flowers. In fact it is anomalous in *Dichroa* in that it presents but four stamens instead of from 10 to 12 as in the other described species of the genus. In all other characters it is distinctly a *Dichroa*, and is accordingly placed in this genus. Except in its very much larger leaves the present species has much the facies of *Dichroa philippinensis* Schltr., but the latter has flowers with ten stamens.

MELIACEAE

AGLAIA Loureiro

AGLAIA BREVIPETIOLATA sp. nov.

Species *A. luzoniensis* Merr. & Rolfe (*A. monophyllae* Park.) affinis, differt foliis multo minoribus, usque ad 7 cm longis et 2.5 cm latis, nervis utrinque 5 vel 6, petiolis brevioribus, 5 ad 7 mm longis.

A small tree, the branches terete, glabrous, the younger branchlets rather densely cupreous-lepidote. Leaves simple, oblong-lanceolate, coriaceous, pale-brownish and rather dull when dry, 5 to 7 cm long, 1.5 to 2.5 cm wide, the upper surface glabrous, the lower with few scattered cupreous scales on the midrib and lateral nerves; nerves 5 or 6 on each side of the midrib, slender, anastomosing, the reticulations obsolete or nearly so; petioles cupreous-lepidote, 5 to 7 mm long. Fruit obovoid, brown when dry, about 1.5 cm long, densely and minutely cupreous-lepidote, in short, axillary, solitary racemes, the rachis scarcely exceeding 1 cm in length.

LUZON, Province of Sorsogon, Mount Bagacaua, in damp forests, *Bur. Sci. 23522 Ramos*, August 19, 1915.

This species manifestly belongs in the same group with *Aglaia luzoniensis* Merr. & Rolfe (*A. monophylla* Perk.), from which it is readily distinguished by its much smaller, very much narrower, differently shaped, fewer nerved, coriaceous leaves, and its short petioles. It is one of the few known representatives of this large genus having simple leaves.

APHANAMYXIS Blume

APHANAMYXIS CORIACEA sp. nov.

Arbor alta, ramulis junioribus parce ferrugineo-puberulis; foliis usque ad 45 cm longis, foliolis inaequilateralibus, coriaceis, oblongo-ellipticis ad oblongo-obovatis, usque ad 14 cm longis rotundatis ad breviter obtuse acuminatis, basi acutis, nervis utrinque 8 ad 10, distinctis, reticulis subobsoletis; spicis axillaribus, solitariis, usque ad 35 cm longis, multifloris, circiter 1.5 cm diametro; sepalis 5, pubescentibus, liberis vel subliberis; petalis 3, glabris; antheris 6; ovario obscure hirsuto, 3-loculare.

A tall tree, the ultimate branches stout, pale, about 1 cm in diameter, the younger parts ferruginous-puberulent. Leaves up to 45 cm long, the petiole and rachis obscurely puberulent, rather stout; leaflets usually about 13, coriaceous, pale-olivaceous, inequilateral, oblong-elliptic to oblong-obovate, stiff when dry, slightly shining, base inequilateral, acute, apex rounded to broadly and shortly acuminate, the upper surface entirely glabrous, the lower very sparingly pubescent on the midrib and

lateral nerves, becoming glabrous or nearly so; lateral nerves 8 to 10 on each side of the midrib, prominent, obscurely anastomosing close to the margin, the reticulations subobsolete. Spikes rather stout, up to 35 cm long, the rachis about 3 mm in diameter, cinereous-puberulent, the upper part including the rather densely arranged, sessile, yellowish-white flowers, about 1.5 cm in diameter. Sepals reniform-ovate, rounded, free or nearly so, coriaceous, about 3 mm long and 4 mm wide, pubescent. Petals 3, free, concave, coriaceous, rounded, about 8 mm long, elliptic to elliptic-obovate. Staminal tube obovoid, about 6 mm long, contracted at the truncate mouth, glabrous, free. Anthers 6, included, 3.4 mm long. Ovary very obscurely hirsute, 3-celled; stigma narrowly pyramidal, furrowed, acute, about 2.5 mm long, glabrous.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23576 Ramos*, September 10, 1915, in damp forests.

The alliance of this species is manifestly with **APHANAMYXIS ELMERI** (Merr.) (*Amora elmeri* Merr.), from which it differs in many characters, including its larger flowers, prominently pubescent sepals, and puberulent inflorescences and younger parts of the plant. From *Aphanamyxis perrottetiana* (C. DC.) Harms it differs notably in its smaller, much fewer nerved leaflets, which are never rounded at the base.

SABIACEAE

MELIOSMA Blume

MELIOSMA VULCANICA sp. nov.

Arbor circiter 10 m alta, inflorescentiis parcissime pubescentibus exceptis glabra; foliis 1-foliolatis, subcoriaceis, oblongis ad oblongo-ellipticis, longe petiolatis, usque ad 13 cm longis, breviter acuminatis, basi acutis, margine integris, nervis utrinque circiter 6, subtus valde prominentibus; paniculis terminalibus et e axillis superioribus, erectis, pedunculatis, circiter 10 cm longis; floribus 5-meris, petalis glabris, exterioribus late ovatis ad suborbicularis, 2.3 ad 3 mm latis, interioribus oblanceolatis, acutis.

A tree about 10 m high, quite glabrous except the sparingly pubescent inflorescence, the branches and branchlets terete. Leaves simple, subcoriaceous, oblong to oblong-elliptic or sometimes narrowly oblong-obovate, 7 to 13 cm long, 3 to 5.5 cm wide, brown and slightly shining when dry, entire, apex slightly acuminate, base acute, the lower surface a little paler than the upper; lateral nerves about 6 on each side of the midrib, prominent on the lower surface, dark-brown, anastomosing, the primary reticulations lax, distinct; petioles 2.5 to 3.5 cm long.

Panicles erect, terminal and in the upper axils, peduncled, comparatively few-flowered, slightly pubescent. Flowers white, fragrant, the bracteoles ovate, acute, about 1 mm long, slightly pubescent, equalling or shorter than the pedicels. Sepals broadly ovate, 1 to 1.3 mm long, obtuse, margins slightly ciliate-pubescent, the inner three slightly larger than the outer two. Outer three petals glabrous, rather thick, broadly ovate to subreniform, about 2.5 mm long, 2.3 to 3 mm wide, rounded. Inner petals oblong-oblanceolate, acute, about 1.6 mm long and less than 0.5 mm wide. Ovary glabrous.

LUZON, Province of Sorsogon, Bulusan Volcano, *Bur. Sci., 23657 Ramos*, September 4, 1915, on forested slopes.

A species well characterized by its simple, glabrous, entire, rather long-petioled leaves, quite different from all other known Philippine and Malayan forms.

MELIOSMA MEGALOBOTRYS sp. nov.

Arbor alta, partibus junioribus inflorescentiisque ferrugineo-pubescentibus; foliis pinnatis, circiter 25 cm longis, foliolis circiter 13, oblongis, integris, acuminatis, usque ad 9 cm longis, nervis utrinque circiter 7; paniculis terminalibus, circiter 50 cm longis, breviter pedunculatis, ramis inferioribus usque ad 20 cm longis; floribus sessilibus, petalis exterioribus circiter 2 mm diametro, interioribus valde reductis, bifidis.

A tall tree, the younger parts and the inflorescence rather prominently brown- or ferruginous-pubescent with short hairs. Ultimate branches rather stout, about 1 cm in diameter. Leaves pinnate, about 25 cm long, the rachis sparingly pubescent; leaflets about 13, oblong, entire, acuminate, base rounded to acute, 7 to 9 cm long, 2 to 3 cm wide, subcoriaceous, the upper surface pale and somewhat shining when dry, the lower surface pale-brownish, sparingly pubescent on the midrib and lateral nerves; lateral nerves about 6 on each side of the midrib, prominent on the lower surface. Panicles terminal, pyramidal, up to 50 cm long, the lower branches up to 20 cm in length, apparently spreading, all parts more or less brown-pubescent. Flowers numerous, sessile, mostly in groups of threes along the ultimate branchlets, white, the bracteoles ovate, acute, somewhat pubescent, about 1 mm long. Sepals similar to the bracteoles. Outer three petals suborbicular, rounded, about 2 mm in diameter, the inner two reduced to a cleft scale less than 1 mm long adnate to the basal part of the fertile filaments. Ovary ovoid, glabrous, about 1 mm long.

LUZON, Province of Sorsogon, Mount Lalao, *Bur. Sci. 23516 Ramos*, August 14, 1915, on forested slopes.

Among the Philippine species with pinnate leaves this one is well characterized by its rather small, entire leaflets, its very large, brown-pubescent panicles, and sessile flowers.

TILIACEAE

TRICHOSPERMUM Blume

TRICHOSPERMUM ERIOPODUM (Turcz.) comb. nov.

Grewia eriopoda Turcz. in Bull. Soc. Nat. Mosc. 31[1] (1858) 231; Vid. Phan. Cuming. Philip. (1885) 99, Rev. Pl. Vasc. Filip. (1886) 70; F.-Vill. Novis. App. (1880) 30.

SAMAR, *Cuming 1680* (type number). LUZON, Province of Sorsogon, Bulusan Volcano, *Bur. Sci. 23658 Ramos*, September 6, 1915.

This species was described from flowering specimens collected in about the year 1838, and has not appeared in our recent collections until the year 1915, when Ramos discovered it in Sorsogon Province. The recently collected material is in fruit, which enables me definitely to remove the species from *Grewia* and transfer it to *Trichospermum*. The capsules are 2-valved, somewhat compressed, about 2 cm wide and 1 cm long, very broadly ovoid or somewhat reniform, slightly apiculate, clothed with long, brownish, shining, soft hairs. The species is very closely allied to *Trichospermum leytense* Merr., the latter being distinguished especially by its somewhat pubescent leaves.

DILLENIACEAE

SAURAUIA Willdenow

SAURAUIA SORSOGONENSIS sp. nov.

Frutex, ramulis subtus foliis ad costa nervisque petiolis inflorescentiis prominente adpresse setosis, sepalis exterioribus valde patule setosis; foliis oblongis, in siccitate brunneis, usque ad 12 cm longis, acute acuminatis, basi obtusis, nervis utrinque 6 ad 8; floribus axillaribus, solitariis et longe pedicellatis vel in cymis paucifloris, sepalis exterioribus prominente setosis, circiter 9 mm longis, interioribus angustioribus, glabris vel parce setosis; stylis 3 vel 4, liberis, 4 ad 5 mm longis.

A shrub, rather prominently appressed-setose, the sepals with numerous, spreading, setose hairs. Branches terete, pale-brownish, the older ones glabrous, the younger ones rather densely covered with pale or brownish, stout, appressed setae. Leaves firmly chartaceous, brown when dry, oblong, 7 to 12 cm long, 2 to 4 cm wide, sharply acuminate, base obtuse, the margins setose-toothed, the upper surface nearly glabrous, or with few, scattered, very short, appressed scales, the lower surface much paler than the upper, with more or less scattered, appressed, rather slender setae on the midrib, nerves, and prominent reticulations; lateral nerves 6 to 8 on each side of the midrib, prominent; petioles densely appressed-setose, about 1 cm long.

Flowers white, axillary and in the axils of fallen leaves, solitary or in reduced, few-flowered cymes, their pedicels slender, appressed-setose, 1 to 1.8 cm long, when cymose not more than three flowers in a cyme, the peduncles about as long as the pedicels, the bracts lanceolate, acuminate, about 7 mm long. Outer three sepals ovate, about 9 mm long, 6 mm wide, uniformly densely setose with spreading, rather slender, brown setae, the inner two sepals narrowly oblong, 9 mm long, 4 mm wide, thinner than the outer, glabrous except for the exposed median part near the base which is sparingly setose. Ovary glabrous; styles 3 or 4, free to the base, 4 to 5 mm long.

LUZON, Province of Sorsogon, Bulusan Volcano, *Bur. Sci., 23681 Ramos*, September 5, 1915, in the mossy forest.

This species is allied to *Saurauia gracilipes* Merr. and to *S. elmeri* Merr., the group having the two inner sepals much narrower than the outer three and nearly glabrous, the flowers mostly solitary, and long pedicelled. It differs from both in its much stouter, very much more prominent setae.

SAURAUIA OLIGANTHA sp. nov.

Frutex, partibus junioribus parcissime breviter adpresse furfuraceo-setosis; foliis oblongo-ellipticis ad oblongo-obovatis, usque ad 10 cm longis, acuminatis, nervis utrinque circiter 5; floribus axillaribus, pedicellatis, vel in cymis bifloris, sepalis circiter 4 mm longis, parcissime adpresse setosis; stylis 3, liberis, circiter 3 mm longis.

A shrub, the young branchlets densely covered with short, closely appressed, scalelike setae, otherwise nearly glabrous. Branches terete, brownish. Leaves subcoriaceous, oblong-elliptic to oblong-obovate, 6 to 10 cm long, 2.5 to 4 cm wide, obscurely acuminate or merely acute, base obtuse to rounded, the margins distantly and shortly setose-toothed, the upper surface brownish-olivaceous when dry, with very few, widely scattered, small scales, the lower surface much paler, with few scattered scales on the midrib and nerves; lateral nerves about 5 on each side of the midrib, prominent, curved, anastamosing. Flowers white, axillary, solitary or in 2-flowered cymes, the pedicels 1 cm long or less, the peduncles, when present, as long as the pedicels, both sparingly brown furfuraceous-setose. Outer three sepals broadly ovate to suborbicular, rounded, about 4 mm long, with few short, appressed scales, the inner two similar but thinner. Petals 5, oblong-obovate, retuse, about 6 mm long. Ovary glabrous; styles 3, free to the base, about 3 mm long.

LUZON, Province of Sorsogon, Mount Bagacaua, *Bur. Sci. 23426 Ramos*, August 20, 1915, in the mossy forest.

Apparently as closely allied to *Saurauia sparsiflora* Elm. as to any other species, but with much smaller, fewer nerved leaves, which are not prominently toothed.

OCHNACEAE

SCHUURMANSIA Blume

SCHUURMANSIA PARVIFOLIA sp. nov.

Arbor glabra, foliis confertis, oblanceolatis vel oblongo-oblanceolatis, in siccitate brunneis, nitidis, usque ad 7 cm longis, apice obscure acuminatis, leviter crasse apiculatis, basi attenuatis, nervis utrinque densissime confertis; paniculis terminalibus, multifloris, usque ad 12 cm longis, floribus circiter 6 mm diametro.

A glabrous tree, the leaves crowded near the ends of the branchlets, the branchlets terete, brownish, with numerous, rather crowded petiolar scars. Leaves oblong-oblanceolate to oblanceolate, coriaceous, uniformly brown and shining on both surfaces when dry, entire, the apex shortly acuminate and with an obscure, stout apiculus, below gradually narrowed in the lower one-half or two-thirds, the nerves very numerous, densely arranged, slender; petioles usually about 1 cm long, the lamina more or less decurrent. Panicles terminal, very many flowered, erect, up to 12 cm long, branched from or near the base, the lower branches 5 to 6 cm long. Flowers white. Sepals elliptic, rounded, about 3 mm long. Petals ovate-elliptic to obovate, rounded, 4 mm long. Stamens 5, 3 mm long, the filiform staminodes nearly as long as the stamens. Ovary ovoid, about 0.5 mm long.

LUZON, Province of Sorsogon, Lake Polog, *Bur. Sci. 23648 Ramos*, August 25, 1915.

Except for the plant described by F.-Villar as *Calophyllum vidalii*, the above is the first representative of the genus to be found in the Philippines. With the addition of two Philippine species of *Schuurmansia*, the genus now comprises nine distinct species extending from southern Luzon to New Guinea, but not extending to the Sunda Islands.[3]

SCHUURMANSIA VIDALII (F.-Vill.) comb. nov.

Calophyllum vidalii F.-Vill. ex Ceron Cat. Pl. Herb. Manila (1902) 229, plate.

Calophyllum cuneatum Vidal l. c. in syn.

LUZON, Province of Camarines Sur, Mount Isarog, *Vidal 2134* in herb. Kew.

Opportunity is here taken to transfer to its proper family and genus the species mentioned above that was placed by F.-Villar in *Calophyllum*.

[3] Hallier, H. Ueber die Luxemburghieen-gattungen Schuurmansia, Schuurmansiella und Blastemanthus. Recueil Trav. Bot. Néerl. 10 (1913) 340–355.

The specimen on which the species was based was collected by Vidal, and although no number is cited by F.-Villar in the original description, it is *Vidal 2134*, which is represented by a duplicate in the Kew Herbarium. It is very curious that the species should have been described as a *Calophyllum*, with which genus it has little in common except that the venation of the leaves is somewhat suggestive of that genus.

This species is manifestly closely allied to the preceding, but apparently has larger leaves. Moreover, the leaves are retuse at the apex, not coarsely apiculate, and are dull and pale when dry, not uniformly brown and shining, while the nerves are distinctly more prominent. In the first supplement to Index Kewensis *Calophyllum vidalii* is listed but the authority for the species is erroneously given as Ceron, and the place of publication erroneously as Vidal's "Revision de plantas vasculares de Filipinas," a work that appeared in 1886, not in 1892. The latter is the date of publication of Ceron's "Catálogo de las plantas del herbario" in which the original description and plate appear.

GUTTIFERAE

GARCINIA Linnaeus

GARCINIA MICROPHYLLA sp. nov. § *Mangostana.*

Arbor glabra, 6 ad 8 m alta, ramis teretibus, ramulis tenuibus obscure angulatis, internodis brevibus; foliis numerosis, confertis, oblongo-ellipticis, coriaceis, usque ad 4 cm longis, utrinque subaequaliter angustatis, basi acutis, apice breviter rostrato-acuminatis, margine revolutis, nervis tenuibus, numerosis; cymis solitariis vel binis, axillaribus, 2-floris; floribus 4-meris; staminibus in phalangibus stipitatis dense confertis; fructibus globosis, 1 ad 2 cm diametro, seminibus 1 vel 2.

A small glabrous tree 6 to 8 m high, the branches slender, terete, the branchlets obscurely 4-angled, the internodes short. Leaves very numerous, crowded, oblong-elliptic, 3 to 4 cm long, 1 to 2 cm wide, coriaceous, brownish and somewhat shining when dry, subequally narrowed to the acute base and to the shortly rostrate-acuminate apex, the acumen blunt, margins recurved; lateral nerves very numerous, slender, densely arranged, not prominent; petioles 2 to 3 mm long. Flowers 4-merous, small, on the branchlets below the leaves, solitary or in short, 2-flowered cymes, the peduncles short, the whole inflorescence not exceeding 5 mm in length. Outer 2 sepals reniform-ovate, about 1 mm long, the inner two subelliptic, concave, about 4 mm long. Petals 4, as long as the inner sepals, elliptic, rounded. Stamens numerous, arranged on four phalanges, the phalanges, 3.5 mm long, the lower 1 mm without anthers, otherwise with scattered sessile anthers on all parts. Rudimentary style 2 mm long, the stigma discoid or depressed-globose, about 1.2 mm in diameter. Fruit globose, 1 to 2 cm in diameter, brown when dry, the pericarp

crustaceous, brittle, crowned with the disklike stigmatic scar. Seeds 1 or 2, hemispheric, about 1.5 cm in diameter.

LUZON, Province of Sorsogon, Lake Polog, *Bur. Sci. 23633 Ramos*, August 26, 1915, in flower (type); Mount Kililibong, *Bur. Sci. 23479 Ramos*, August 16, 1915, in fruit.

The alliance of this species is with *Garcinia eugeniaefolia* Wall. and *G. gitingensis* Elm., from which it is distinguished by its decidedly smaller leaves which have revolute margins. Perhaps it is but a reduced form of *Garnicia eugeniafolia*, due to its habitat.

RHIZOPHORACEAE

GYNOTROCHES Blume

GYNOTROCHES LANCEOLATA sp. nov.

Arbor glabra, foliis subcoriaceis, lanceolatis, usque ad 7 cm longis et 2 cm latis, tenuiter acuminatis, in siccitate nitidis, brunneis, nervis utrinque circiter 6; floribus numerosis, fasciculatis, pedicellatis, 4-meris, sepalis circiter 2 mm longis.

An entirely glabrous tree, the branches terete, the young branchlets dark-brown in color, smooth, shining. Leaves lanceolate, subcoriaceous, 4.5 to 7 cm long, 1 to 2 cm wide, when dry brown and shining, paler beneath, narrowed above to the rather slenderly acuminate apex and below to the acute base; lateral nerves about 6 on each side of the midrib, distinct on the lower surface, and like the midrib and distinct reticulations darker in color than the leaf surface; petioles 3 to 4 mm long. Flowers 4-merous, very numerous, in axillary fascicles, their pedicels 4 to 5 mm long, jointed in the middle. Sepals oblong-ovate to ovate, obtuse to acute, about 2 mm long. Petals obovate, fimbriate, nearly as long as the sepals. Style-arms 7 or 8, radiate, short. Fruit red, fleshy, about 4 mm long, much wrinkled when dry.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23407 Ramos*, August 6, 1915, in forests.

A species differing from *Gynotroches axillaris* Blume in its much smaller, quite differently shaped leaves, and from *G. parvifolia* Merr., in its entirely differently shaped, much narrower, prominently and rather slenderly acuminate leaves.

MYRTACEAE

EUGENIA Linnaeus

EUGENIA SUBCAUDATA sp. nov. § *Syzygium.*

Arbor parva, glabra, *E. paucipunctatae* affinis, differt foliis haud puncticulatis, inflorescentiis multo brevioribus pauciflori-busque, floribus majoribus, calycis tubo circiter 5 mm longo.

A small glabrous tree, the branches and branchlets terete,

brownish. Leaves numerous, coriaceous, crowded, oblong-elliptic, olivaceous when dry, the lower surface greenish, not punctate, 4 to 6 cm long, 1.5 to 2.5 cm wide, subequally narrowed to the acute base and to the slenderly subcaudate-acuminate apex, the acumen blunt, about 1 cm long; lateral nerves slender, crowded, about 30 on each side of the midrib, the primary ones scarcely distinguishable from the secondary ones, anastomosing with a distinct submarginal nerve, the margins cartilaginous and distinctly revolute; petioles 3 to 4 mm long, slender. Inflorescence terminal, 2 cm long or less, with few branches and few flowers, the flowers sessile, mostly in triads on the very short ultimate branchlets. Calyx ellipsoid, not funnel-shaped, about 5 mm long. Young fruit subglobose, about 1 cm in diameter.

LUZON, Province of Sorsogon, Mount Kililibong, *Bur. Sci. 23324 Ramos*, August 18, 1915, in forests near the summit of the mountain, apparently at an altitude of about 1,000 meters.

Manifestly very closely allied to *Eugenia paucipunctata* Merr., its leaves in size, shape, texture, and venation being almost identical with those of that species; they are not glandular-punctate however. The inflorescence is quite different, being shorter, with but very few, larger flowers, the calyx-tube ellipsoid, not funnel-shaped.

EUGENIA SORSOGONENSIS sp. nov. § *Jambosa.*

Arbor alta, glabra ramis ramulisque teretibus; foliis oppositis, oblongis ad oblongo-obovatis, subcoriaceis, in siccitate subolivaceis, nitidis, haud puncticulatis, usque ad 11 cm longis, apice acuminatis, basi acutis, nervis utrinque circiter 8, distinctis, laxis; inflorescentiis terminalibus, e basi ramosis, subcorymbosis, circiter 7 cm longis, floribus in triadibus dispositis, numerosis, in alasbastro circiter 1 cm longo.

A tall glabrous tree, the branches and branchlets terete, rather smooth, pale-brownish. Leaves opposite, oblong to oblong-obovate, subcoriaceous, 8 to 11 cm long, 3 to 4.5 cm wide, the apex rather prominently but shortly acuminate, base acute, the upper surface olivaceous or brownish-olivaceous, smooth and shining when dry, the lower surface much paler, not glandular-punctate; lateral nerves about 8 on each side of the midrib, slender, prominent, somewhat brownish, lax, curved, anastomosing, the reticulations lax; petioles 5 to 8 mm long. Inflorescence terminal, corymbose, branched from the base, up to 7 cm long and at least as wide, rather many flowered. Flowers white, in triads at the tips of the ultimate branchlets, shortly pedicelled, the calyx-tube narrowly funnel-shaped, about 7 mm long, the lobes 4, short, rounded. Petals 4, free. Stamens very numerous, elongated, slender.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23373 Ramos*, August 1, 1915, in forests on the lower slopes.

In leaf-form and appearance this species strongly resembles *Eugenia balerensis* C. B. Rob. (*E. brunnea* C. B. Rob.), but the latter has its flowers solitary on the ultimate branchlets, not in triads. Its true alliance seems to be with *Eugenia cinnamomea* Vid., but while it closely resembles that species its inflorescence is entirely glabrous.

EUGENIA BREVIPANICULATA sp. nov. § *Jambosa.*

Arbor alta, glabra, ramis ramulisque teretibus; foliis oppositis, ellipticis ad oblongo-ellipticis, coriaceis, in siccitate supra olivaceis, subtus pallidis, basi acutis, apice breviter obtuse acuminatis, usque ad 7 cm longis, nervis utrinque 4 vel 5, subtus distinctis, laxis; inflorescentiis terminalibus lateralibusque, brevibus, paucifloris, calycis infundibuliformis, circiter 1 cm longis.

A tall glabrous tree, the branches pale, terete, the branchlets slender, the ultimate ones 2 mm in diameter or less, terete. Leaves opposite, elliptic to oblong-elliptic, coriaceous, 4 to 7 cm long, 2 to 3.5 cm wide, subequally narrowed to the acute base and to the shortly and obtusely acuminate apex, the upper surface olivaceous when dry, the lower pale, somewhat shining; lateral nerves 4 or 5 on each side of the midrib, slender but prominent on the lower surface, anastomosing, the reticulations obsolete or nearly so; petioles 2 to 3 mm long. Inflorescence terminal, axillary, and in the axils of fallen leaves, at most 3 cm long, usually shorter, usually 3- to 5-flowered, the flowers white, often in triads, or the inflorescence often reduced to a single triad. Calyx-tube funnel-shaped, about 1 cm long, the lobes reniform, about 2 mm wide, shorter than wide. Style slender, about 1.5 cm long.

LUZON, Province of Sorsogon, Mount Bagacaua, *Bur. Sci. 23567 Ramos*, August 21, 1915, in forests along small streams.

This species belongs in the group with *Eugenia xanthophylla* C. B. Rob., and is perhaps as near *Eugenia llanosii* Merr. as any other described form. It is, however, very different from that species. Its leaves very closely resemble those of *Eugenia whitfordii* Merr., but that species has cauline inflorescences.

EUGENIA LEUCOCARPA sp. nov. § *Syzygium.*

Arbor alta, glabra, ramis ramulisque teretibus; foliis coriaceis, oblongo-obovatis ad late oblongo-oblanceolatis, usque ad 5.5 cm longis, nitidis, in siccitate supra olivaceis, subtus pallidis, apice breviter abrupte acuminatis, deorsum gradatim angustatis, basi acutis, nervis utrinque numerosis, dense dispositis, subtus prominente purpureo-puncticulatis. Inflorescentiis terminalibus, 6

ad 8 cm longis, paniculatis; fructibus globosis, albidis, edulis, in siccitate circiter 6 mm diametro.

A tall glabrous tree, the branches and branchlets slender, terete, brownish, rather smooth. Leaves coriaceous, oblong-obovate to broadly oblong-oblanceolate, 4 to 5.5 cm long, 1.5 to 2.5 cm wide, the apex abruptly and shortly acuminate, gradually narrowed in the lower two-thirds to the acute or cuneate base, the upper surface olivaceous when dry, shining, the lower paler and distinctly glandular-punticulate with numerous dark-purplish glands; lateral nerves very numerous, slender, indistinct, densely arranged; petioles about 5 mm long. Panicles terminal, 6 to 8 cm long, the branches few, the lower ones up to 5 cm long, spreading-ascending, each bearing three secondary branches above the middle. Calyx immediately following anthesis somewhat urceolate, truncate, about 3 mm long. Fruit white, fleshy, edible, when dry rather hard, pale, globose, about 6 mm in diameter.

LUZON, Province of Sorsogon, Mount Bulusan, *Bur. Sci. 23672 Ramos*, September 4, 1915, in damp forests.

A characteristic species in the group with small flowers, terminal inflorescence, and densely nerved leaves. It does not appear, however, to be especially closely allied to any of the previously described Philippine forms.

EUGENIA DURA sp. nov. § *Syzygium.*

Arbor alta glabra ramis ramulisque teretibus vel ramulis leviter compressis; foliis oppositis, coriaceis, ellipticis ad oblongo-ellipticis, usque ad 9 cm longis, utrinque subaequaliter angustatis, apice breviter subcaudato-acuminatis, basi acutis, nitidis, in siccitate olivaceo-brunneis, subtus pallidioribus, nervis primariis utrinque circiter 15, tenuibus, margine revolutis; inflorescentiis terminalibus, corymbosis, floribus ut videtur in triadibus dispositis; fructibus in siccitate valde induratis, oblongo-ellipsoideis vel junioribus cylindraceis, usque ad 2.5 cm longis, brunneo-purpureis.

A tall glabrous tree, the branches and branchlets terete, brownish, smooth, or the slender branchlets somewhat compressed. Leaves opposite, coriaceous, elliptic to oblong-elliptic, 7 to 9 cm long, 2 to 4 cm wide, subequally narrowed to the acute base and to the rather slender and short subcaudate-acuminate apex, the acumen up to 1 cm long, blunt, when dry the upper surface strongly shining, very smooth, olivaceous-brownish, the lower surface much paler, not punctate; lateral nerves indistinct, the primary ones about 15 on each side of

the midrib, slender, scarcely more evident than the secondary ones, anastomosing with a faint submarginal nerve, the leaf margin revolute; petioles about 1 cm long. Inflorescence terminal, corymbose, in fruit about 7 cm long and wide, peduncled, the flowers apparently in triads on the ultimate branchlets. Young fruit cylindric to somewhat sausage-shaped, up to 1.5 cm long and 7 mm in diameter, nearly mature ones oblong-ellipsoid, about 2.5 cm long, subequally narrowed at both ends, all very hard when dry and brownish-purple in color.

LUZON, Province of Sorsogon, Bulusan Volcano, *Bur. Sci. 23670 Ramos*, September 4, 1915, in forests on the lower slopes.

The species is perhaps in the same group as *Eugenia crassibracteata* Merr., but is much larger in all respects, has quite differently shaped leaves, and a different inflorescence. The cylindric or sausage-shaped immature fruits, which are very hard when dry, are very characteristic.

MELASTOMATACEAE

MEDINILLA Gaudichaud

MEDINILLA SORSOGONENSIS sp. nov.

Frutex scandens, glaber, ramis ramulisque crassis, acute tetragonis; foliis oppositis, petiolatis, oblongis, acuminatis, basi acutis vel rotundatis, 5-nerviis, usque ad 24 cm longis; inflorescentiis lateralibus, solitariis, umbellatis, breviter pedunculatis, paucifloris, floribus 4-meris, staminibus subaequalibus.

A scandent glabrous shrub apparently of small size, the branches stout, about 1 cm in diameter, acutely 4-angled, not setose at the nodes. Leaves opposite, petiolate, membranaceous when dry, oblong, 16 to 24 cm long, 6 to 8 cm wide, base acute or rounded, apex slenderly acuminate, olivaceous when dry, somewhat shining; nerves all basal, the inner pair more prominent than the outer, the transverse nervules very slender, obscure; petioles 3 to 4 cm long. Inflorescence lateral, solitary, scattered along the stem, consisting of short-peduncled, few-flowered umbels, the peduncles 1 to 1.5 cm long, slender. Flowers 4-merous, usually about 5 in each umbel, their pedicels 1 cm long or less. Calyx obconic, about 7 mm long, the limb produced, truncate. Petals irregularly oblong-obovate, about 12 mm long. Stamens subequal, the lanceolate anthers 10 mm long, curved, acuminate.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23556 Ramos*, August 6, 1915, in the mossy forest.

This species is manifestly closely allied to *Medinilla polillensis* C. B. Rob., which it greatly resembles. That species, however, has prominently 3- or 5-plinerved leaves, while the present one has distinctly 5-nerved ones.

ASTRONIA Blume

ASTRONIA SORSOGONENSIS sp. nov.

Arbor parva, ramulis petiolis subtus foliis ad costa nervisque inflorescentiisque plus minusve ferrugineo-furfuraceis; foliis chartaceis, oblongis, olivaceis, acuminatis, basi acutis, 3-plinerviis vel paene 3-nerviis, usque ad 9 cm longis; paniculis pyramidatis 5 ad 7 cm longis, pedunculatis vel e basi ramosis; capsulis subglobosis, circiter 2.5 mm diametro.

A small tree, the younger parts ferruginous-furfuraceous. Branches grayish or brownish, terete, glabrous, the branchlets densely ferruginous-furfuraceous. Leaves numerous, oblong, chartaceous, olivaceous, somewhat shining, 4 to 9 cm long, 2 to 3 cm wide, equally narrowed to the acute base and to the rather slenderly acuminate apex, the upper surface glabrous, the lower ferruginous-furfuraceous on the longitudinal nerves; nerves 3, the lateral pair prominent, leaving the midrib within 1 or 2 mm of the base; petioles ferruginous-furfuraceous, 5 to 8 mm long. Panicles terminal, pyramidal, peduncled or sometimes branched from the base, up to 10 cm long, more or less ferruginous-furfuraceous. Capsules, globose, about 2.5 mm in diameter, glabrous, the teeth very small.

LUZON, Province of Sorsogon, Mount Kililibong, *Bur. Sci. 23699 Ramos*, August 16, 1915 (type); Mount Bagacaua, *Bur. Sci. 23430 Ramos*, August 26, 1915, in forests at the summit, altitude apparently about 1,000 meters.

The species is closely allied to *Astronia acuminatissima* Merr., which it greatly resembles, but is distinguished by its ferrugineous-furfuraceous indumentum and the more nearly basal lateral nerves of its leaves.

ASTRONIA BADIA sp. nov.

Arbor circiter 10 m alta, inflorescentiis dense brunneo-furfuraceo-lepidotis, subtus foliis uniformiter dense brunneo- vel cupreo-lepidotis; foliis longe petiolatis, elliptico-oblongis, usque ad 25 cm longis, acuminatis, basi obscure auriculatis, 5-nerviis, nervis exterioribus tenuibus; paniculis circiter 8 cm longis, e basi ramosis, subcorymbosis; floribus 5-meris, calycis circiter 4 mm diametro.

A tree about 10 m high, glabrous except the inflorescence and the lower surface of the leaves. Branches rather stout, dark colored when dry. Leaves elliptic-oblong, chartaceous, about 25 cm long and 11 cm wide, subequally narrowed to the shortly acuminate apex and to the obscurely auriculate base, the upper surface glabrous, olivaceous, the lower densely and uniformly covered with small, distinct, papyraceous, brown or cupreous scales; nerves 5, basal, the inner pair very prominent, the outer pair slender, all reaching the apex of the leaf, the transverse

nerves slender; petioles 5 to 8 cm long. Panicles terminal, subcorymbose, nearly flat, branched from the base, densely brown-lepidote, the branches few, the lower ones about 6 cm long, the upper ones shorter, ascending. Flowers red, 5-merous, short-pedicelled, the calyx cup-shaped, brown, sparingly lepidote, about 4 mm in diameter, the teeth ovate, acute, less than 2 mm long. Petals suborbicular, when immature about 2.5 mm in diameter.

LUZON, Province of Sorsogon, Lake Polog, *Bur. Sci. 23646 Ramos*, August 28, 1915, in forests.

A species somewhat resembling *Astronia dioica* Merr., from which it is at once distinguished by its very long petioles, the lamina not at all decurrent.

ARALIACEAE

BOERLAGIODENDRON Harms

BOERLAGIODENDRON RAMOSII sp. nov.

Species *B. luzoniense* Merr. affinis, differt inflorescentiis parcissime pubescentibus vix paleaceis, pedunculis lateralibus glabris, ebracteatis.

An erect shrub 1 m high or more, the ultimate branches glabrous, pale, at least 1 cm in diameter. Leaves palmately 7-lobed, up to 27 cm in length, chartaceous, glabrous, suborbicular in outline, the lobes oblong-obovate, coarsely lyrately lobed, distantly and sharply toothed, extending to within 3 to 7 cm of the base, the sinuses rounded, the lobules of the central lobes two or three, of the lower ones one or two, oblong-ovate to triangular, acute or shortly and sharply acuminate; petioles up to 22 cm in length, the basal part with three or four, spirally arranged, coriaceous, narrow, toothed crests. Inflorescence terminal, 8 to 10 cm long and wide, the peduncle stout, about 2 cm long, obscurely paleaceous, the bracts subtending the primary branches lanceolate, up to 2 cm in length; primary branches about fifteen, 2 to 2.5 cm long, slightly pubescent, not paleaceous, each bearing a central, short-peduncled head, and two long-peduncled lateral heads. Sterile flowers of the central head pedicelled, the pedicels about 5 mm long, glabrous or obscurely pubescent, the head subtended by numerous linear to lanceolate bracts and bracteoles, 8 to 13 mm in length, about 10 flowers in each head, the fruits globose, glabrous, 4 to 5 mm in diameter. Peduncles of the lateral heads glabrous, about 2.5 cm long, ebracteate, the heads globose, about 1 cm in diameter, dense, obscurely pubescent, the flowers 25 to 30 in each head, sessile or very shortly pedicelled, about 2 mm long, intermixed with few small scales.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23467 Ramos*, July 29, 1915, in damp forests near the base of the mountain.

A species strongly resembling *Boerlagiodendron luzoniense* Merr., but differing radically in the details of its inflorescence which is nearly glabrous, not densely paleaceous, the peduncles of the lateral heads longer and ebracteate.

DIPLYCOSIA Blume

DIPLYCOSIA LUCIDA sp. nov.

Frutex scandens glaber, ramis ramulisque teretibus; foliis ellipticis, coriaceis, nitidis, usque ad 7 cm longis, apice obtusis vel rotundatis, basi acutis, margine revolutis, integris, nervis utrinque 2 vel 3, adscendentibus, distinctis; floribus axillaribus, binis, longe pedicellatis; fructibus obovoideis, in siccitate circiter 5 mm longis.

An entirely glabrous scandent shrub, the branches and branchlets slender, terete, pale or brownish, smooth. Leaves coriaceous, shining, elliptic, 5 to 7 cm long, 2.5 to 3.5 cm wide, the apex rounded or obtuse, base acute, margins entire, revolute; lateral nerves 2 or 3 on each side of the midrib, rather prominent, ascending, the reticulations lax; petioles about 7 mm long. Flowers in axillary pairs, their pedicels slender, about 1.5 cm long. Corolla glabrous, cylindric, about 3 mm long, the lobes 5, broadly ovate, 0.5 mm long. Stamens 10, the filaments 1.7 mm long, slightly pubescent; anthers about 1 mm long. Fruit black when dry, obovoid, about 5 mm long, the persistent calyx teeth broad, short, apiculate.

LUZON, Province of Sorsogon, Mount Kililibong, *Bur. Sci. 23504 Ramos*, August 17, 1915, on trees at the summit, apparently at an altitude of about 1,000 meters.

A species well characterized by being entirely glabrous, by its obtuse or rounded leaves with revolute margins, and by its axillary pairs of long-pedicelled flowers. It somewhat resembles *Diplycosia baclayanensis* Elm., but differs in its leaf characters and in its long pedicels.

MYRSINACEAE

MAESA Forskål

MAESA LONGIPETIOLATA sp. nov. § *Eumaesa.*

Frutex scandens vel suberectus, glaber, ramis ramulisque subteretibus, brunneis; foliis oblongis, chartaceis ad subcoriaceis, in siccitate supra olivaceis, subtus brunneis, usque ad 7 cm longis, apice breviter obscure acuminatis, basi rotundatis, margine obscure undulatis, obscurissime distanter denticulatis, nervis utrinque circiter 4, tenuibus, obscuris, petiolo 1.5 cm longo; inflorescentiis axillaribus, 2.5 ad 4 cm longis, depauperato-paniculatis, sepalis haud lineatis, glabris, late ovatis, obtusis,

persistentibus; fructibus supra basin bracteolis minutis instructis.

A glabrous, apparently scandent shrub, the branches slender, terete, brown, rather smooth. Leaves oblong, firmly chartaceous to subcoriaceous, oblong, 5 to 7 cm long, 2 to 3 cm wide, slightly shining when dry, the upper surface olivaceous, the lower brown, apex shortly and obscurely blunt acuminate, base rounded, margins obscurely undulate and distantly and minutely denticulate; lateral nerves about 4 on each side of the midrib, slender, obscure; petioles slender, about 1.5 cm long. Inflorescence axillary, 2.4 to 4 cm long, sometimes a simple raceme, more often with one or two short branches from the lower part forming a depauperate panicle. Pedicels about 1.5 mm long, the subtending bracts ovate-lanceolate, acute, about 1 mm long. Fruit narrowly ovoid, brown, about 3 mm long, supplied above the base with a pair of small, ovate, persistent bracteoles about 0.5 mm long. Sepals broadly ovate, entirely glabrous, not at all punctate, rounded or obtuse, broadly ovate, about 1 mm long.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23358 Ramos*, August 5, 1915, in forests near the summit.

The alliance of this species is manifestly with the widely distributed and somewhat variable *Maesa denticulata* Mez, from which it can at once be distinguished by its smaller, much narrower, differently shaped leaves, which are obscurely undulate and denticulate and brownish beneath when dry, and its shorter inflorescences.

SAPOTACEAE

SIDEROXYLON Linnaeus

SIDEROXYLON SARCOCARPUM sp. nov.

Arbor, alta, ramulis subtus foliisque dense adpresse ferrugineo-chryseo-pubescentibus; foliis oblongis vel elliptico-oblongis, usque ad 23 cm longis, subcoriaceis, acuminatis, basi acutis vel decurrentibus, utrinque nitidis, in siccitate pallidis, nervis utrinque 12 ad 14, subtus valde prominentibus; floribus lateralibus, fasciculatis; fructibus carnosis, glabris, ellipsoideis vel obovoideis, junioribus circiter 2 cm longis.

A tall tree, the leaves beneath prominently and densely pubescent with short, appressed, golden-ferruginous hairs. Branches grayish, rather stout, glabrous, the younger parts densely appressed ferruginous-pubescent, the very young leaves densely ferruginous-pubescent throughout. Leaves oblong to oblong-elliptic, subcoriaceous, rather pale when dry, 12 to 23 cm long, 4 to 9 cm wide, the upper surface entirely glabrous,

apex shortly acuminate, base narrowed, acute or somewhat decurrent; lateral nerves 12 to 14 on each side of the midrib, very prominent on the lower surface, slightly curved, obscurely anastomosing near the margin, the reticulations distinct; petioles 2 to 3 cm long, pubescent. Flowers on the branches below the leaves, fascicled, in young fruit the pedicels rather stout, appressed pale- or ferruginous-pubescent, about 8 mm long. Sepals suborbicular, coriaceous, rounded, about 5 mm in diameter. Immature fruits glabrous, wrinkled, shining, dark-colored when dry, subglobose to ellipsoid or obovoid, at least 2 cm in length, apparently soft and fleshy.

LUZON, Province of Sorsogon, Mount Lalao, *Bur. Sci. 23415 Ramos*, August 10, 1915, in forests near the summit of the mountain.

Quite different from the other known Philippine species, well characterized by its rather large leaves which are densely appressed-pubescent beneath with ferruginous-golden hairs. It may be as closely allied to *Sideroxylon foxworthyi* Elm. as to any other species, but its indumentum is entirely different in color and in character from that of the latter species.

EBENACEAE

DIOSPYROS Linnaeus

DIOSPYROS ULO sp. nov.

Arbor circiter 15 m alta, glabra vel subglabra, ramis ramulisque tenuibus teretibus; foliis chartaceis, oblongis, pallidis, usque ad 12 cm longis, utrinque subaequaliter angustatis, acuminatis, basi acutis, nervis utrinque 6 vel 7, tenuibus; fructibus globosis, in siccitate crustaceis, circiter 5 cm diametro, extus leviter adpresse pubescentibus, calycis persistentibus, circiter 1.5 cm diametro; seminibus 8, brunneis, 2.5 cm longis, albumine aequabile.

A tree about 15 m high, glabrous or nearly so (flowers not seen), the branches and branchlets slender, terete, light-gray. Leaves chartaceous, rather pale when dry, slightly shining, oblong, 7 to 12 cm long, 2.5 to 4.5 cm wide, subequally narrowed to the acute base and to the acuminate apex, eglandular; lateral nerves 6 or 7 on each side of the midrib, slender, anastomosing, the reticulations slender, lax; petioles 3 to 4 mm long. Fruits globose, about 5 cm in diameter, 8-celled, 8-seeded, black when dry, pericarp crustaceous, with subpersistent scattered, appressed, short, grayish hairs. Seeds about 2.5 cm long, brown, triangular in cross section, the albumen uniform, very hard.

LUZON, Province of Cagayan, Luzon, Lal-lo, *For. Bur. 23243 Barros*, July 21, 1914, in forests at an altitude of about 30 meters; locally known as *ulo*.

Here I also refer tentatively *Bur. Sci. 23413 Ramos*, from Mount Lalao, Province of Sorsogon, Luzon, which differs from *Diospyros ulo* as above described in its leaves being brownish when dry, more strongly shining, the very young branchlets and petioles slightly pubescent, and the immature fruits entirely glabrous and shining, brown, not black in color, when dry. It is possible that this Sorsogon plant represents a distinct species, but additional material is desirable before attempting to separate it.

SYMPLOCACEAE

SYMPLOCOS Jacquin

SYMPLOCOS ACUMINATISSIMA sp. nov. § *Bobua.*

Arbor glaberrima vel inflorescentiis parce pubescentibus; foliis lanceolatis, longe tenuiter caudato-acuminatis, usque ad 11 cm longis, chartaceis ad subcoriaceis, nitidis, basi acutis, margine irregulariter undulato-crenatis, nervis utrinque 8 ad 10, distantibus, anastomosantibus; racemis in axillis superioribus, solitariis, usque ad 6 cm longis, junioribus leviter pubescentibus, vetustioribus glabris; fructibus anguste ovoideis, obtusis, circiter 8 mm longis.

A tall tree, quite glabrous or the inflorescence at anthesis and in young fruit sparingly pubescent. Branches slender, terete, smooth, brownish, the branchlets similar but more slender. Leaves numerous, somewhat crowded on the ultimate branchlets, lanceolate, 7 to 11 cm long, 1 to 2.5 cm wide, yellowish green when dry, chartaceous to subcoriaceous, shining, gradually narrowed into the long, slender, blunt, caudate-acuminate apex, the acumen up to 3 cm in length, the base acute, the margins irregularly undulate-crenate; lateral nerves 8 to 10 on each side of the midrib, slender, anastomosing, the reticulations lax; petioles 1 to 1.7 cm long. Racemes in the upper axils, mostly solitary, simple, up to 8 cm in length, when young appressed-pubescent, in age perfectly glabrous. Fruit narrowly ovoid, terete, smooth, obtuse, brownish when dry, about 8 mm long.

LUZON, Province of Sorsogon, Bulusan Volcano, *Bur. Sci. 23690 Ramos* (type), September 5, 1915, in the mossy forest. Here I also refer *Bur. Sci. 23333 Ramos* from Mount Bagacaua, Sorsogon; perhaps *Wenzel 888*, determined as *S. villarii* Vid., also is referable here.

The alliance of this species is with *Symplocos villarii* Vid. (*S. polyandra* Brand, but *not Guettarda polyandra* Blanco), from which it is distinguished by its lanceolate, very long, and slenderly caudate-acuminate leaves.

GESNERIACEAE

CYRTANDRA Forster

CYRTANDRA SORSOGONENSIS sp. nov.

Frutex subscandens, partibus junioribus subtus foliis ad costa nervisque petiolis floribusque densissime longe ferrugineo-

villosis; foliis longe petiolatis, oblongis ad oblongo-ellipticis, usque ad 13 cm longis, acutis, serratis, basi obtusis ad rotundatis, nervis utrinque 10 ad 12, subtus valde prominentibus; floribus circiter 2 cm longis, calycibus valde inflatis, 5-lobatis, lobis ovatis, 4 ad 5 mm longis.

A subscandent shrub, very prominently villous with dense, long, soft, brown or ferruginous hairs. Branches pale-gray, terete, about 7 mm in diameter, the younger parts very densely villous as are the petioles, inflorescences, flowers, and midrib and nerves on the lower surface of the leaves. Leaves oblong to oblong-elliptic, subcoriaceous, 9 to 13 cm long, 3.3 to 6 cm wide, those of each pair somewhat unequal in size, the upper surface nearly black when dry, glabrous or nearly so, the lower brownish in color, densely villous on the midrib, nerves, and somewhat so on the reticulations, the apex acute, base obtuse to rounded, margins distantly serrate; petioles of the larger leaf of each pair up to 6 cm in length, of the smaller one 2 to 3 cm. Flowers axillary, apparently fascicled; pedicels, calyx, and corolla externally very densely and softly villous; pedicels 6 to 8 mm long. Calyx inflated, up to 1 cm in diameter, about 1.5 cm long, ovoid, the lobes ovate, acute, 4 to 5 mm long, outside very densely villous. Corolla cylindric, 2 cm long, densely villous, the lobes orbicular-ovate, subequal, spreading or somewhat recurved, about 2 mm long. Anthers 2 mm long. Ovary narrowly ovoid, glabrous; style elongated, appressed-hirsute.

LUZON, Province of Sorsogon, Mount Kililibong, *Bur. Sci. 23318 Ramos*, August 18, 1915, on trees at the summit.

A most characteristic species, readily distinguished from the numerous Philippine forms by its long-petioled leaves, its very dense, brown or ferruginous indumentum, and its inflated calyces. Perhaps allied to *Cyrtandra villosissima* Merr., but entirely different from that species.

RUBIACEAE

GARDENIA Linnaeus

GARDENIA OBSCURINERVIA sp. nov.

Frutex scandens, glaber, foliis anguste oblongis, coriaceis, nitidis, acuminatis, basi acutis, usque ad 14 cm longis, nervis utrinque circiter 10, subtus subobsoletis; floribus axillaribus, fasciculatis, sessilibus, 5-meris, fasciculatis, bracteis ovatis 6 ad 7 mm longis persistentibus suffultis, calycibus obovoideis, cylindraceis, circiter.5 mm longis, corolla cylindracea, elongata, tubo circiter 10 cm longo, lobis lanceolatis, 4 ad 5 cm longis.

A glabrous scandent shrub, the branches stout, rugose when

dry, terete or somewhat angled. Leaves narrowly oblong or oblong-lanceolate, coriaceous, brittle, blackish when dry, shining, 12 to 14 cm long, 2.5 to 4.5 cm wide, acuminate, base acute; lateral nerves obscure, slender, about 10 on each side of the midrib, visible on the upper surface but obsolete or nearly so on the lower surface, reticulations obsolete; petioles 2 to 2.5 cm long; stipules about 4 mm long. Flowers large, white, fragrant, 5-merous, sessile, fascicled, axillary, 3 to 5 in each fascicle, the fascicles subtended by several, imbricate, triangular-ovate, acute to obtuse, submembranaceous, prominently nerved, 6 to 7 mm long bracts. Calyx tube terete, obovoid, glabrous, about 4 mm long and wide, the lobes ovate, rounded, minutely ciliate on the margins. Corolla tube slender, cylindric, about 10 cm long and 2 to 3 mm in diameter, the lobes lanceolate, spreading or recurved, acute or acuminate, 4 to 5 cm long and about 5 mm wide.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23492 Ramos*, August 1, 1915.

This most striking and characteristic species does not resemble any species of the genus known to me, and is strongly characterized by its obscurely nerved, coriaceous leaves, and very long, slender, fascicled, axillary, sessile flowers, the fascicles subtended by several imbricate persistent bracts.

MORINDA Linnaeus

MORINDA PLATYPHYLLA sp. nov.

Frutex alte scandens, glaber; foliis ellipticis, usque ad 18 cm longis, in siccitate subnigris, nitidis, apice acuminatis, basi acutis, nervis utrinque circiter 10, subtus valde prominentibus, subtus in axillis leviter barbatis; inflorescentiis terminalibus, umbellatis, capitulis numerosis, 25 ad 30, fructibus globosis, longe pedunculatis, circiter 1 cm diametro, pedunculis usque ad 4 cm longis.

A scandent shrub, apparently of large size, glabrous except the slightly bearded axils of the veins on the lower surface of the leaves. Branches stout, wrinkled when dry, pale-brownish, somewhat 4-angled, 6 to 8 mm in diameter. Leaves, elliptic, blackish when dry, subcoriaceous, shining, 15 to 18 cm long, 7 to 9 cm wide, acuminate, base somewhat acute; lateral nerves about 10 on each side of the midrib, prominent on the lower surface, the ultimate reticulations distinct, rather close; petioles about 3 cm long, black. Inflorescence terminal, umbellate, from 25 to 30 heads in each umbel, the heads, in fruit, black when dry, globose, about 1 cm in diameter, each composed of 25 or more individual fruits grown together in a somewhat fleshy mass, the peduncles up to 4 cm in length.

LUZON, Province of Sorsogon, Mount Lalao, *Bur. Sci. 23414 Ramos*, August 9, 1915, in forests near the summit of the mountain.

A species apparently belonging in the same group as the Malayan *Morinda jackiana* Korth., but quite glabrous. It is entirely different from all the other described Philippine forms.

TIMONIUS DeCandolle

TIMONIUS OLIGOPHLEBIUS sp. nov.

Arbor circiter 6 m alta, ramulis foliis inflorescentiisque plus minusve ferrugineo-pubescentibus; foliis ellipticis ad obovatis, subcoriaceis, in siccitate brunneis, usque ad 8 cm longis, nitidis, utrinque rotundatis vel obtusis, nervis utrinque 4 vel 5; inflorescentiis axillaribus, solitariis, circiter 6 cm longis, longe pedunculatis, furcatis; fructibus sessilibus, ellipsoideis vel late ovoideis, circiter 6 mm longis.

A tree about 6 m high, the branchlets, leaves, and inflorescence more or less pubescent with short brownish hairs. Branches slender, pale-grayish or brownish, terete, glabrous, the younger ones with appressed ferruginous hairs. Leaves elliptic to somewhat obovate, brown and somewhat shining when dry, 6 to 9 cm long, 3.5 to 5 cm wide, rounded at both ends, or sometimes obtuse, the base rarely acute, somewhat ferruginous-pubescent on the midrib and nerves on both surfaces, more especially on the lower surface; lateral nerves 4 or 5 on each of the midrib, prominent on the lower surface, curved-ascending, anastomosing, the reticulations few, lax; petioles about 1 cm long, ferruginous-pubescent. Inflorescence axillary, solitary, forked at the apex of the long peduncle, the peduncle 3 to 4 cm long, the branches about 2 cm in length, ferruginous-pubescent. Fruits ellipsoid or broadly ovoid, sessile, about 6 mm long, glabrous or with few scattered ferruginous hairs, one at the fork and 4 or 5 arranged in a single row on each of the two branches.

LUZON, Province of Sorsogon, Mount Kililibong, *Bur. Sci. 23367 Ramos*, August 17, 1915, in forests near the summit, apparently at an altitude of about 1,000 meters.

The alliance of this species is with *Timonious trichophorus* Merr., of Leyte, from which it differs in its differently shaped, fewer nerved leaves and other characters.

MUSSAENDA Linnaeus

MUSSAENDA MULTIBRACTEATA sp. nov.

Arbor parva, prominente hirsuta; foliis in paribus subaequalibus, membranaceis, ovatis, usque ad 20 cm longis, acuminatis, basi attenuatis, nervis utrinque circiter 11, prominentibus; inflorescentiis terminalibus, dense hirsutis, multibracteatis, bracteis lanceolatis, hirsutis, subpersistentibus, ad 13 mm longis;

floribus 5-meris, extus dense hirsutis, corollae tubo 3 cm longo, sepalis late lanceolatis, circiter 2 cm longis, persistentibus, sepala foliacea circiter 7 cm longa.

A shrub or small tree, 3 to 4 m high, most parts prominently hirsute with stiff, spreading, pale-brownish hairs, the branches terete, brown. Leaves in equal or subequal pairs, membranaceous, olivaceous, ovate, 10 to 20 cm long, 6 to 10 cm wide, the midribs and lateral nerves of both surfaces prominently hirsute with spreading hairs, apex acuminate, base equilateral, attenuate; lateral nerves about 11 on each side of the midrib, prominent; petioles proper 1 to 2 cm long, hirsute. Panicles terminal, ample, prominently spreading-hirsute, up to 20 cm in diameter, with numerous, crowded, subpersistent bracts and bracteoles, the flowers 5-merous, somewhat crowded on the ultimate branchlets; bracts and bracteoles similar, lanceolate, acuminate, hirsute, 6 to 13 cm long, the former sometimes cleft or trifid with lateral lobes much smaller than the central one. Calyx tube narrowly ovoid, densely hirsute with stiff, spreading, 2 mm long hairs, 8 to 9 mm long, the lobes persistent, broadly lanceolate, acuminate, hirsute outside, sparingly pubescent inside, about 2 cm long and 6 mm wide, the foliaceous one ovate to elliptic ovate, about 7 cm long and 4 cm wide, sparingly hirsute, acute or obscurely acuminate, base acute, prominently nerved and reticulate. Corolla tube cylindric, rather stout, densely hirsute outside, 3 cm long, the limb about 13 mm in diameter, spreading or recurved, the lobes broadly ovate, glabrous inside, obtuse or acute, about 5 mm long.

LUZON, Province of Sorsogon, Mount Pocdal, *Bur. Sci. 23585 Ramos*, August 10, 1915, on damp slopes in open forests. Apparently also referable here is a fruiting specimen from the same mountain, *Bur. Sci. 23715 Ramos*, collected August 6, 1915.

The alliance of this species is with *Mussaenda philippinensis* Merr., in the section with persistent sepals. It differs from that species, however, in its more prominent indumentum, its much broader bracts and bracteoles, broader persistent sepals, stouter, densely hirsute, longer corolla tube, broader limb, and longer corolla lobes.

THE PHILIPPINE JOURNAL OF SCIENCE, C. BOTANY.
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A NEW SPECIES OF HYDNOCARPUS

By C. DECANDOLLE
(*Geneva, Switzerland*)

In November, 1914, Mr. T. Alcala of Daraga, Albay Province, Luzon, submitted to the Bureau of Agriculture in Manila, some rather large detached fruits, accompanied by an inquiry as to whether or not they were edible. The fruits, which resembled nothing that had previously been received in the herbarium of the Bureau of Science, were identified by me as belonging to the *Flacourtiaceae*. A request was then sent to Mr. Alcala, that an attempt be made to secure flowering material of the plant. To this request Mr. Alcala courteously complied, and in February, 1915, collected flowering specimens of the plant which he transmitted to Manila. This material reached Manila after my departure for the United States, and in view of the possible special interest of the plant, a portion of it was transmitted to Dr. C. DeCandolle in Geneva for identification. In view of the fact that chaulmoogra oil, which is produced by Asiatic representatives of the closely allied genus *Taraktogenos*, and perhaps by representatives of the genus *Hydnocarpus*, it was thought that this Philippine form, having numerous large seeds, might prove to be of some value, and that its oil might possibly have the same curative value in the treatment of leprosy as is found to be the case with the true chaulmoogra oil.—E. D. M.

FLACOURTIACEAE

HYDNOCARPUS Gaertner

HYDNOCARPUS ALCALAE C. DC. sp. nov.

Monoicus, foliis breviter petiolatis, glabris, limbo oblongo-ovato integro basi inaequilatera latere latiore rotundato angustiore attenuato apice obtusiuscule acuminato, penninervio, nervis lateralibus adscendentibus utrinque 7; racemo simplici glabro folium superante dissite cymuligero, floribus hermaphroditis longe pedicellatis, sepalis 5 ovatis glabris, petalis 5 quam sepala paullo brevioribus ellipticis basi truncatis apice margine intusque breviter hirsutis, squamis basi petalorum affixis oblongis apice acute apiculatis extus dense et breviter hirsutis; staminibus

5 petala fere aequantibus, filamentis tenuibus antheris extrorsis; ovario oblongo-obovato dense et albescente hirsuto, stigmate sessili radiatim 5-partito, laciniis carnosis deorsum reflexis apice dilatatis emarginatisque, placentis 5 parietalibus dense ovuliferis, fructu magno obovoideo glabro seminibus oblongo-ellipticis.

Arbor 4 ad 5 m alta trunco 50 ad 60 cm ambitu ramis glabris. Folia alterna. Limbus in sicco firmus, usque ad 25 cm longus et 11 cm latus, petiolus 1 cm longus. Racemus floriferus 54 cm longus. Pedicelli 2.5 cm longi. Sepala 1.2 cm longa, 0.7 cm lata. Petala 0.8 cm longa 0.5 cm lata. Antherae 0.2 cm longae. Fructus in sicco atrorubescens 23 cm longus et usque ad 14.5 cm latus. Semina 80 ad 90 usque 3 cm longa.

LUZON, Province of Albay, in damp ravines in Daraga and in the Camilig Mountains, *T. Alcala,* in herb. Manila and DeCandolle.

The vernacular name is *dudu-dudu,* and regarding the plant Mr. Alcala writes: "It is said that the oil extracted from the seeds is a good cure for wounds. It is generally believed to be poisonous, and when I ate six or eight of the boiled seeds I had a slight sickness; however, many children eat them raw without the slightest ill effect."

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MISCELLANEOUS NEW FERNS

By EDWIN BINGHAM COPELAND[1]
(From the College of Agriculture, University of the Philippines, Los Baños, P. I.)

ATHYRIUM RIDLEYI Copel. sp. nov.

Filix insignis gregis A. Swartzii (Bl.) Copel.; rhachi inerme, in sulcis minute pilosa; pinnis alternantibus, stipitatis, brevifalcato-acuminatis, basi truncatis, deorsum grosse crenato-serratis dentibus obtusis vel rotundatis, fere 40 cm longis, plusquam 10 cm latis; venulis 10–12 paribus, irregulariter anastomosantibus et medio inter venas areolas plures steriles includentibus; indusio angustissimo.

PAHANG, *Ridley 13970.*

Javan ferns referable to *Athyrium accedens* or *A. Swartzii* rarely have additional areolæ, included between the regular rows, but are never ample in a measure comparable to this fern. *Digrammaria robusta* Fée, treated by Van Alderwerelt and Christensen as included in *Diplazium proliferum*, was described by Fée from Bourbon material as generically distinct because only the lowest veins unite.

MICROLEPIA RIDLEYI Copel. sp. nov.

Fronde grande, bipinnata, rhachibus sub lente minute pubescentibus; pinnis ca. 70 cm longis, fere 20 cm latis, brevistipitatis, acuminatis; pinnulis subsessilibus, basibus perobliquis, acuminatis, apicibus rectis vel subfalcatis, inciso-crenatis, costa deorsum indusiisque puberulentibus, aliter glabris, membranaceis; lobis ca. 8 mm latis, truncatis, integris vel crenulatis; venis inconspicuis; soris in lobo magno basale acroscopico pluribus, aliter infra incisiones solitariis; indusio semicyathiforme.

PERAK, *Ridley 14200.*

Different from *Microlepia platyphylla* (Don) J. Sm. in texture, inconspicuous veins, hairy indusia, and most essentially in the form of the indusium. Don's diagnosis of *Davallia platyphylla* is too brief to permit certain discrimination. Hooker[2] describes *D. lonchitidea* Wall. as identical with it; his figure is that of a fern very similar to *M. Ridleyi*, with sessile pinnules, while the text says "primary and secondary pinnules much petioled." I believe that both names, *platyphylla* and *lonchitidea*,

[1] Dean of the College of Agriculture, and professor of plant physiology, University of the Philippines.

[2] Sp. Fil. 1: 173.

apply to the plant figured by Beddome,[3] which is very distinct. It has naked indusia, broader than long, usually cordate, and with free sides.

ANGIOPTERIS MADAGASCARIENSIS De Vriese.

MADAGASCAR, *Humblot 546.*

De Vriese[4] concludes his description with "An fortasee potius evolutionis status?" That his specimen was decidedly immature is shown by several of his notes; especially, "Sori . . . nigri, propter indusium quo teguntur, haud bene conspiciendi." The character on which he lays most emphasis, the very thin and pellucid pinnule, depends on the immaturity.

Humblot's specimen is mature, and permits the following corrections to be made in the description:

Rachis pale brown and, like the costa, nearly naked; pinnules up to 20 cm long, lanceolate, dentate with moderately serrate tip, papyraceous, subpellucid, veins opaque, conspicuous, false veins present, but inconspicuous and reaching less than halfway to the costa; sori 2 mm from the margin, 1.5 to 2 mm long, deep brown, on the outside almost black because of the dried and adherent indusium, of which there are no loose fragments; sporangia 10 to 15, or rarely 18. The pinnules are rather long-stalked (3 mm); the lowest has a stalk 2 cm long, and bears 2 free leaflets on the lower side—as sometimes observed in other species with very ample fronds. As these deviations from De Vriese's description are all such as a mature frond could be expected to show in comparison with an immature one, I have no doubt that the plants are the same.

ELAPHOGLOSSUM PARVUM Copel. sp. nov.

Rhizomate breve, suberecto, paleis ovatis ferrugineis decidue et sparsiter ciliatis occulto; stipitibus confertis, frondium sterilium ca. 2 cm altis applanatis squamosis sursum mox glabrescentibus, frondis fertilis 6 cm alto; fronde sterile oblanceolata, obtusa, deorsum sensim angustata, coriacea, angustissime deflexo-marginata, glabra vel glabrescente, 10–15 cm alta, 2 cm lata; venis obliquis, occultis, costa utraque facie applanata; fronde fertile 6 cm alta, lanceolata.

CHINA, Fokien Province, coll. on Mr. Dunn's expedition to central Fokien, 1905, *Hongkong Herbarium 3821.*

This has the form of a very small *E. decurrens*, but utterly different paleae.

ELAPHOGLOSSUM MACGREGORI Copel. sp. nov.

Rhizomate crasso, repente, paleis 1–1.5 cm longis linearibus integris rigidis castaneis nitidis dense obtecto; stipitibus confertis, frondium sterilium 1–4 cm altis, applanatis, alatis, stramineis, nudis, frondis fertilis fere 10 cm alto sursum solummodo alato; fronde sterile 20–25 cm alta, 2–3 cm lata, subacuminata, oblanceolata, deorsum sensim ad alam stipitis angustata, coriacea, inferne sub lente pilis stellatis sparsiter ornata, angustissime cartilagineo-marginata; venis obliquis, immersis, in-

[3] Ferns of Southern India, *Pl. 130.* [4] Monogr., 23–24.

conspicuis, costa utraque facie applanata; fronde fertile 10 cm longa, 2.5 cm lata, basi abrupte cuneata.

LUZON, Mountain Province, Polis Mountain, *Bur. Sci. 19780 R. C. McGregor.*

Most nearly related to *E. callifolium* (Bl.) Moore, but very much smaller and with almost sessile sterile fronds. *Elaphaglossum callifolium* is not known north of Negros.

ELAPHOGLOSSUM BASILANICUM Copel. sp. nov.

E. decurrenti (Bl.) Moore affine, frondibus sterilibus subsessilibus, acutis, oblanceolatis, inferne praecipue costam et marginem secus squamis laceratis sat dense vestitis, costa inferne carinata.

BASILAN, *Bur. Sci. 16232 Reillo.*

Very distinct from other species, but closely related to *E. decurrens*, the scales both on the rhizome and scattered over the nether surface of the frond being of the same peculiar types. The denser scales along costa and margin are larger and less completely dissected. All fronds, even the oldest, remain decidedly scaly. The sterile fronds are narrower than those of *E. decurrens*, and not quite so coriaceous. The color is a rather light reddish-brown.

LYGODIUM VERSTEEGII Christ in Rés. de l'Exp. Sci. Néerl. à la Nouv. Guinée. 8 (1910) 163.

LUZON, Tayabas Province, Guinayangan, *Bur. Sci. 20821 Escritor.*

As I have previously noted,[5] New Guinea plants believed to represent this species are far from uniform. These Philippine specimens are not quite identical with any I have from New Guinea, but agree with Christ's brief description rather better than do the latter.

LOMAGRAMMA BIPINNATA Copel. sp. nov.

Fronde 40 cm alta, ovata, bipinnata, rhachi castaneo-straminea, sparsissime et minute paleata, glabrescente; pinnis lanceolatis, acuminatis; pinnulis valde auriculatis, basiscopice excisis, super auriculam lanceolatis, acutiusculis, serratis, herbaceis, glabris, venulis liberis simplicibus; pinnulis fertilibus modo contractis, sporangiis apices versus more Acrostichi paginam complentibus, deorsum saepe in soros venas terminates nudos congregatis.

SAMAR, Cauayan Valley, *Bur. Sci. 17515 Ramos*, scandent in dry forest, alt. 100 m.

Aside from the incomplete dimorphism, this is distinguished from *L. articulata* (J. Sm.) Copel. most evidently by the much narrower pinnules. In the moderate specialization of the fertile frond this differs decidedly from any other *Lomagramma*, and for this reason it appears to be the most primitive species of the genus and the most likely to indicate relationships and origin. The appearance of the sterile frond is decidedly that of *Polystichum*, but the rhizome is that of typical *Lomagramma*, which, incidentally, is not really naked. It bears a fine, sparse pubescence, suggesting ultimate descent from *Dennstaedtia* rather than from *Dryopteris*.

[5] Philip. Journal Sci. 6 (1911) Bot. 68.

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THE GENUS LOXOGRAMME

By EDWIN BINGHAM COPELAND
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FOUR PLATES

Loxogramme, as the name of a group of ferns, originated with Blume [1] who used it for a subgenus of *Antrophyum*. In discussing the affinity (a curious expression in pre-Darwinian science) of *Antrophyum*, he points out a resemblance to *Grammitis*, especially to the species (now known as *Polypodium*) with coriaceus fronds and the sori oblique to the costa, and continues: "Plures adeo *Grammitides* ut sectionem propriam, a soris obliquis nomine *Loxogramme* (a λόζος obliquus et γραμμή linea) insignitam, subjungimus *Antrophyis*."

As a generic name, *Loxogramme* dates from Presl,[2] with the following diagnosis. "Venae internae, tenuissimae, ramosissimae, venulisque in maculas hexagonoideas elongatas inaequales anastomostantes et reticulam laxam efficientes. Sori dorso venae lateralis longioris unius aut duarum supra-positarum inserti, lineares, elongati, crassi, obtusi." He adds that the rhizome is creeping; the fronds coriaceous, simple and entire, and the sori immersed, in the upper part of the frond.

The first species listed by Blume is *Antrophyum lanceolatum*, the type of which is *Grammitis lanceolata* Swtz. It is particularly fortunate that Swartz figured this fern himself [3] for Schkuhr, to whom we turn for figures of many illustrations of Swartz's species, has in this case figured a different fern, not belonging in the same genus, under this name. Blume in turn gives an excellent plate of his fern, which is still another species, but this time at least a *Loxogramme*. Presl also presents a figure, to illustrate the generic character (l. c. *Tab. IX, Fig. 8*), and labels it *L. lanceolata;* but it is the *Antrophyum lanceolatum* of Blume, not the *Grammatis lanceolata* of Swartz.

The first species listed by Presl is *Loxogramme coriacea* [*Grammitis coriacea* Kaulf. in Spreng. Syst. Veg. 4 (1827) 71].

[1] Flora Javae 2 (1828) 73.
[2] Tentamen Pteridographiae (1836) 214.
[3] Synopsis Filicum. *Plate I, fig. 4.*

Grammitis coriacea Kaulf is described as differing from *G. lanceolatea* Sw., in being *acutiuscula* instead of *acuminata*, and with sori *linearibus elongatis* instead of *costae contiguis subobliquis*. The type locality is the same for both: "Ins. Mascaren." The two are now treated by all authors as identical.

LOXOGRAMME (Bl.) Presl

To Presl's diagnosis, the following addition is essential: Genus ab Eupolypodii section e frondibus simplicibus (Gramittide auct. plur.) derivatum. In this section, elongate sori, approaching the type of *Loxogramme*, are found, notably in Polypodium magellanicum (Desv.) [*Grammitis magellanica* Desv. Berl. Mag. 5 (1811) 313; *P. Billardieri* (Willd.) C. Chr., non R. Br., best known as *P. australe* Mett., non Fée], and less conspicuously in *P. dolichosorum* Copel. and many other species. In the same group the occasional anastomosis of veins is far from rare in species or individuals with notably wide fronds.

The genus is typically Malayan, extending outward as far as Africa, Japan, and Polynesia. It is supposed to include also a Mexican species, *L. Salvinii* (Hooker) Maxon. I have included this in the key to the species, having no valid reason for not doing so. By diagnosis, it is certainly a *Loxogramme*, and it has altogether the appearance of one. Still, I suspect that a study more careful than I have been able to give to it and the *Eupolypodia* of the same region will show that it has had a separate origin in the parent group, and must therefore not be included in the same daughter genus.

Key to the species.

1. Fronds very dimorphous.
   2. Fertile frond narrowly linear ..... L. dimorpha Copel.
   2. Fertile frond linear-oblong ..... L. conferta Copel.
1. Fronds somewhat dimorphous.
   2. Sori parallel to costa or nearly so ..... L. paltonioides Copel.
   2. Sori moderately spreading ..... L. iridifolia (Christ) Copel.
1. Fronds uniform.
   2. Fronds lanceolate (broadest below the middle) ..... L. Brooksii Copel.
   2. Fronds linear.
      3. Under 20 cm tall ..... L. parallela Copel.
      3. Over 25 cm tall ..... L. linearis Copel.
   2. Fronds linear-oblong, stipitate, small ..... L. africana Copel.
   2. Fronds oblanceolate, broadly or narrowly.
      3. Fronds 1 to 2 cm broad.
         4. Fronds opaque.
            5. Sori costular ..... L. lanceolata (Sw.) Presl.
            5. Sori divergent.
               6. Stipitate ..... L. Fauriei Copel.
               6. Decurrent ..... L. malayana Copel.

4. Fronds pellucid..... L. Salvinii (Hook.) Maxon.
3. Fronds more ample.
4. Fronds narrowed to the base.
5. Stipes short or none.
6. Costa most prominent above..... L. blumeana Presl.
6. Costa most prominent below..... L. involuta (Bl.) Presl.
5. Stipes ±10 cm long..... L. grandis (Racib.) Copel.
4. Fronds abruptly narrowed at base..... L. Forbesii Copel.

LOXOGRAMME LINEARIS Copel. sp. nov.

Rhizomate repente, 2 mm crasso, paleis griseo-castaneis lanceolatis 3 mm longis acutis vel acuminatis vestito; stipitibus proximis vel subremotis, validis, atropurpureis, nitidis, 3–6 cm altis; frondibus 25–30 cm altis, 10–15 mm latis, acuminatis, coriaceis, glabris, costa praecipue superne praestante; soris angulo acuto cum rhachi positis, margine remotis, imbricatis, linearibus, saepius ca. 25 mm longis.

FORMOSA, Arisan, alt. 2,500 m, in rupibus, *Faurie 959*, Junio, 1914.

Between *L. parallela and L. Faurie*, and more like the former, from which it differs in being larger throughout and in the less caudate but broader paleae.

LOXOGRAMME AFRICANA sp. nov.

Rhizomate late repente, 1.2 mm crasso, more generis paleaceo; stipitibus ca. 2 cm distantibus, usque ad alam decurrentem laminae 3 cm altis; fronde 10–15 cm alta, ±15 mm lata, linearioblonga, sursum abrupte acuta vel subacuminata, deorsum ad alam brevem angustata, subcoriacea, opaca; areolis usque ad 7 inter costam et marginem; soris 7–10 mm longis, latis, subimmersis, superne haud praestantibus, costam prope et ea subparallelis, rarius imbricatis.

ANGOLA, Pungo-Andongo, Mechow's expedition *No. 142*, distributed as *Polypodium Loxogramme* Mett., coll. in 1879. This differs from *L. lanceolata* (Sw.) Presl in the shape of the frond, which has an almost uniformly broad central part; the texture is thicker, and the stipe much longer. *Gymnogramme abyssinisa* Baker seems to be *L. lanceolata* rather than this species.

LOXOGRAMME FAURIEI Copel. sp. nov.

Rhizomate repente, 1–2 mm crasso, lignoso, paleis lanceolatis acutis vel acuminatis plerisque deciduis apud baseos stipitum persistentibus castaneis vestito; stipitibus 3–5 cm altis, validis, teretibus vel sursum applanatis; fronde 15–30 cm alta, oblanceolata vel lineari-oblanceolata, acuminata, deorsum sensim angustata, coriacea, glabra, siccante interdum subinvoluta; soris rectis, patentibus, imbricatis, linearibus, ad marginem fere attingentibus.

FORMOSA, Bunkihiyo, alt. 1500 m, in arboribus, *Faurie 405*.

This is the so-called *L. lanceolata* of Japan, of which I have in hand specimens from Nippon and Quelpaert. It differs from real *L. lanceolata* in the paleae, in being more coriaceous, and most conspicuously in the sori. From *L. malayana*, it differs most notably in not being winged to the base; and the fronds are more scattered and more coriaceous. In texture it approaches *L. involuta*.

LOXOGRAMME MALAYANA Copel. nom. nov.

Antrophyum lanceolatum Blume, Enumeratio (1828) 117; Flora Javae 2: 84, *Tab. 36*, non *Grammitis lanceolata* Sw.

Blume's description and plate in "Flora Javae" are complete and make a new diagnosis superfluous. *L. lanceolata* (Sw.) Presl is a plant described from Bourbon and found in East equatorial Africa. It is represented, for instance, by No. 9 of Rosenstock's Filices Africae Orient. Germ., collected by Daubenberger on Kilimanjaro. Its sori are costal and much less spreading, and the frond is stipitate and has its broadest part farther from the apex. *L. malayana* is decidedly taller, broadest near the tip, then less acuminate, and winged nearly or quite down to the insertion on the rhizome. The sori are spreading, and imbricate when in full fruit, and may reach nearly to the margin. Mettenius (Polypodium No. 216) has described the Javan plant as *Polypodium Loxogramme*, but that name must probably be held as fixed by his citations of synonymy and therefore as itself applying to the real *L. lanceolata*.

EXPLANATION OF THE PLATES

[Photographs by Cortes, Bureau of Science.]

PLATE I

FIG. 1. *Loxogramme malayana* Copel., from *Elmer 6276*, Benguet.
2. *Loxogramme lanceolata* (Sw.) Presl, from Swartz Synopsis Filicum *pl. 1. fig. 4.*
3. *Loxogramme lanceolata* (Sw.) Presl, from *Rosenstock 9*, Kilimandjaro.
4. *Loxogramme africana* Copel. Type.
5. *Loxogramme Fauriei* Copel. Type.

PLATE II

FIG. 6. *Loxogramme Brooksii* Copel. Type.
7. *Loxogramme parallela* Copel. Type.
8. *Loxogramme linearis* Copel. Type.
9. *Loxogramme blumeana* Presl, from *Raciborski*, Tjibodas.
10. *Loxogramme involuta* (Bl.) Presl, from *Copeland 1558*, Zamboanga.

PLATE III

FIG. 11. *Loxogramme grandis* (Racib.) Copel. Cotype.
12. *Loxogramme Forbesii* Copel. Type.
13. *Loxogramme iridifolia* (Christ) Copel., from *Copeland 1629*, Zamboanga.

PLATE IV

FIG. 14. *Loxogramme dimorpha* Copel. Type.
15. *Loxogramme paltonioides* Copel. Type.
16. *Loxogramme conferta* Copel. Type.
17. *Loxogramme Salvinii* (Hook.) Maxon, from *Maxon & Hay 3262*, Guatemala.

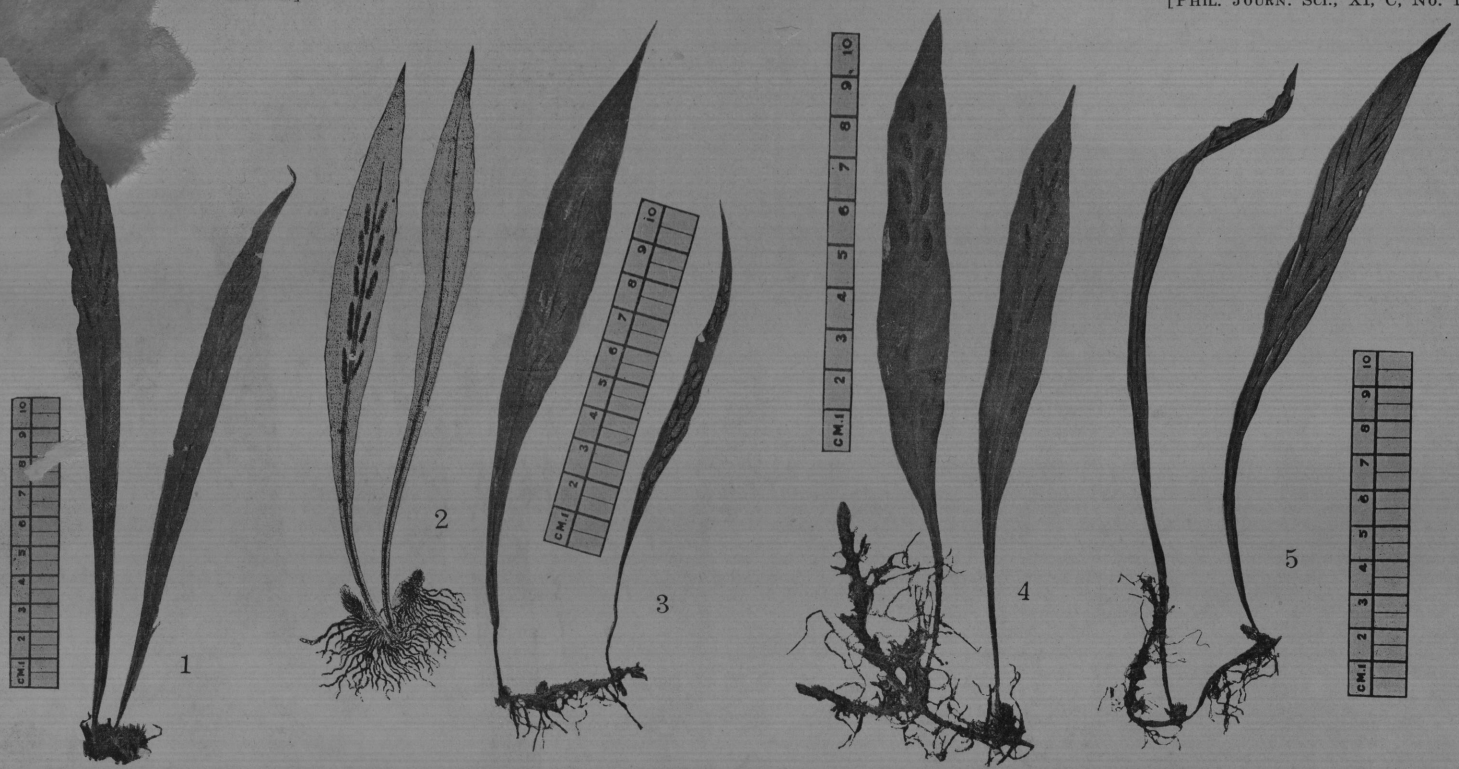


Fig. 1. Loxogramme malayana Copel. 2 and 3. L. lanceolata (Sw.) Presl. 4. L. africana Copel. 5. L. Fauriei Copel.

PLATE I.

Fig. 6. Loxogramme Brooksii Copel. 7. L. parallela Copel. 8. L. linearis Copel. 9. L. Blumeana Presl. 10. L. involuta (Bl.) Presl.

PLATE II.

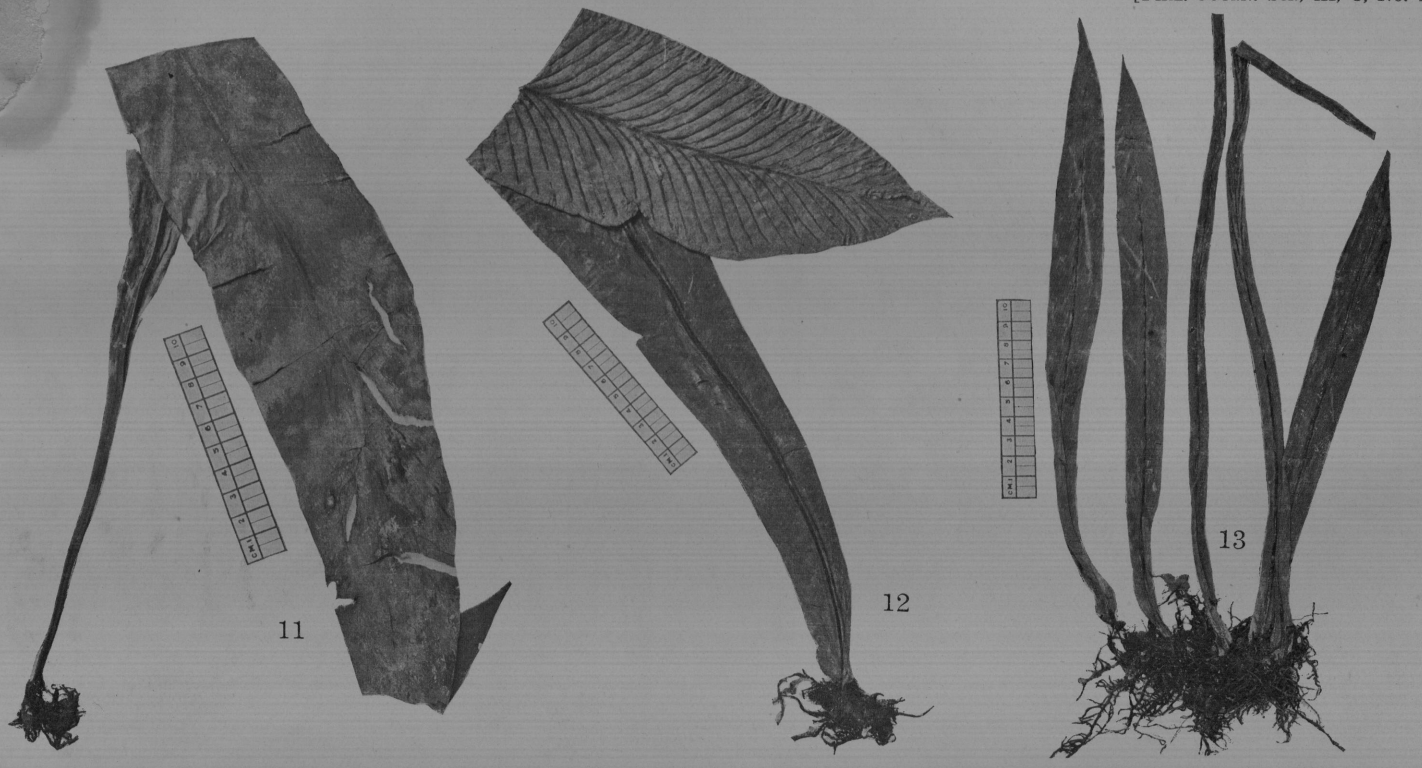
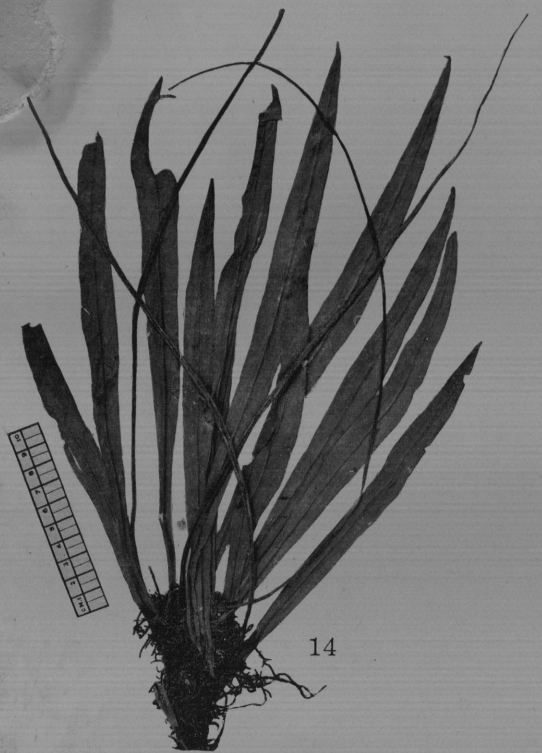


Fig. 11. Loxogramme grandis (Racib.) Copel. 12. L. Forbesii Copel. 13. L. iridifolia (Christ) Copel.

PLATE III.



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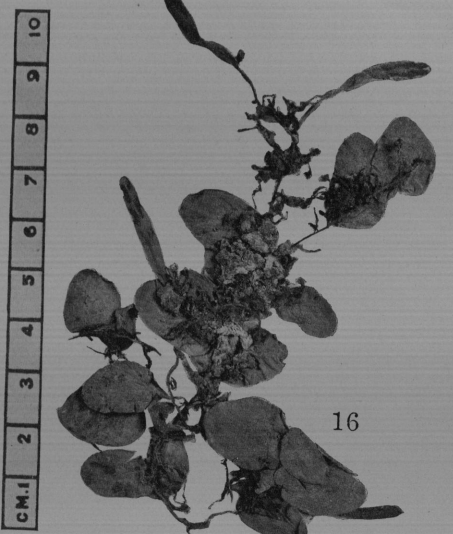

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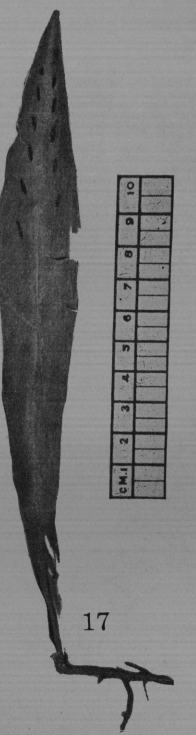

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Fig. 14. Loxogramme dimorpha Copel. 15. L. paltonioides Copel. 16. L. conferta Copel. 17. L. Salvinii (Hook.) Maxon.

PLATE IV.

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